

Helitowcart - DESIGN CHANGE REQUEST-ORDER (ECR/ECO)	F20-01	Page 1 of 3
Reviewed & approved by: /		2006 09 09

# A- REQUEST

ECR : N/A

ECO : 300

Nature of proposed change :	<u>BP350 STREAMLINE</u> <u>PIERCE HOLES ON PADS TO ALLOW AIR PASSAGE &amp; PREVENT SUCCION.</u>
Reason :	<u>A CUSTOMER INFORMED US A PILOT HAS EXPERIENCED SUCCION IN MUD HAS HE WAS TAKING-OFF IN MUD. UNWELCOME IMPACT ON FLIGHT CONDITIONS.</u>
Submitted By :	<u>CLAUDE BOULÉ, HELICOPTERES CANADIENS</u> <u>TO NATHALIE BARBEAU</u>
Date :	<u>2008.07.24</u>

# B- IMPACT ANALYSIS OK FOR CHANGE

Product Manager	<ul style="list-style-type: none"> <li><u>CONSULT ENGINEER VS REQUEST FOR CHANGE ORDER</u></li> <li><u>NO PROBLEM ISSUING CHANGE BULLETIN.</u></li> <li><u>10 PAIRS STREAMLINE ALL SOLD TO CAN. HELI</u></li> <li><u>2 PAIRS STOCK + 32 PADS STOCK.</u></li> </ul> Signature: <u>D. Barbeau</u> /date: <u>2008.07.24</u>
Operation Manager	<u>_____</u> Signature : _____ /date : _____
Quality System Manager	<u>_____</u> Signature : _____ /date : _____
Regulatory affairs Manager	<ul style="list-style-type: none"> <li><u>WILL ISSUE CHANGE BULLETIN ACCORDING TO REG.</u></li> <li><u>OK FOR CHANGE</u></li> </ul> Signature: <u>N. Barbeau</u> /date: <u>2008.07.24</u>
Supplier A	<u>_____</u> Signature : _____ /date : _____
Supplier B	<u>_____</u> Signature : _____ /date : _____
Other	<ul style="list-style-type: none"> <li><u>TC ENGINEER: MIKE ZGELA IS CONSULTED &amp; AGREES TO PERFORM CHANGE</u></li> </ul> Signature: <u>N. Barbeau</u> /date: <u>2008.07.24</u>

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### C- DECISION

Risk analysis	<ul style="list-style-type: none"> <li>• WE WANT TO REDUCE RISK OF SUCTION WHILE MAINTAINING PAD HARDNESS.</li> <li>• ADDING <sup>3x1.5" / NB</sup> 6 HOLES ON EACH SIDE DOES NOT IMPACT HARDNESS BUT ADDS AIR ACCESS.</li> <li>• PROPOSED CHANGE ACTUALLY REDUCES RISKS OF SUCTION &amp; THUS INCREASES SAFETY.</li> </ul> <p>Signature: <u>N. Bateau</u> /date <u>2008.07.24</u></p>
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Decision	<ul style="list-style-type: none"> <li>• GET ALL PADS PIERCED WITH <sup>3x1.5" / NB</sup> 6 HOLES ON EACH SIDE</li> <li>• UPDATE DESIGN ACCORDINGLY</li> </ul> <p>Signature: <u>N. Bateau</u> /date: <u>2008.07.24</u></p>
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### D- ACTION PLAN

- ① SCENARIO 1: 12 x 5/8" HOLES : CANCELED  
 ② " 2: 6 x 1.5" " : SELECTED

Action	Resp	Due date :	Verified by :
*SEE REVERSE			
✓ GET M. IGELA TO PERFORM DOC. CHANGE	NB	② 08.07.31 ① 08.07.29	08.08.12 NB 30/7
✓ REVIEW DOCS	NB	② 08.07.31 ① 08.07.30	08.08.12 NB 30/7
✓ GET DOCS CORRECTED (IF APPL.)	NB	① 08.07.30	NB 30/7
✓ INFORM CAN. HELI	NB	② 08.08.11 ① 08.07.30	NB 08/08/08 NB 30/7 14:49
✓ GET MODIF TRADE B- FOR STOCKS PADS JACOB 36 (AS NEEDED)	JACOB	① 08.08.05	NB 08/08/06
✓ INSPECT STOCKS	NB	08.08.06	NB 08/08/06
✓ COMPLETE ECO #3	NB	08.08.08	NB 08/08/08

Effective date :	Effective lot no :
------------------	--------------------

\* I will pierce only small qty at a time so that if need to issue new bed we have plain pads available.

OUR FIRST ISSUE OF ECO #3 WITH 12 SMALL HOLES (5/8") WAS REJECTED BY C. BOULÉ: HE FELT THE HOLES WERE TOO SMALL & WOULD GET CLOGGED.

SO WE WENT BACK TO MIRKO & DECIDED TO GO WITH 6 HOLES THAT WOULD BE 1.5".

WE SUBMITTED IT TO C. BOULÉ. - HE WANTED TO THINK ABOUT IT (HE WOULD HAVE LIKED 3" HOLES, WHICH WE WERE NOT TO DO AS IT WOULD MAKE THE PAD TOO VULNERABLE). - WE CALLED TWICE TO GETCK.

HE CALLED BACK ON AUG 11, HE WANTED IT IMMEDIATELY. (ANOTHER PILOT HAD COMPLAINED) SO WE ISSUED THE 6 HOLES ECO.

(WE HAVE TALKED OF HAVING A FOURTH HOLE MADE) (HOWEVER WHEN WE CALLED THE ENG. (MIRKO & SIMON) THEY WERE SHUT DOWN FOR 2 WEEKS....

SO FOR A 4TH HOLE, WE WAIT AFTER VACATIONS OF ENG. FIRM.

WE ARE GOING TO HOLD MODIFYING OUR STOCKS UNTIL THEN

P.D. 08 08 12

I CALLED C. BOULÉ TO GET UPDATE ON HOW THEY LIKE THE PADS WITH THE 6 HOLES. HE SAYS HE INSTRUCTED TO PIERCE ALL 10 PADPAIRS. HE HAS HAD NO NEWS SINCE. HE WILL FOLLOW UP. WE AGREE TO TALK AGAIN IN SEPT. I AGREE TO HOLD MODIFYING OUR PAD STOCK UNTIL THEN.

MEANWHILE M. ZELCA IS HAVING S. BERNIER EVALUATE POSS. OF 4TH HOLE. THEY PROVIDE US WITH SKETCH FOR 2 ADDITIONNAL HOLES FOR VENT INSTEAD OF A 4TH LARGE HOLE. SIMON SAYS HE CANNOT DO MORE LARGE HOLES. HE & MIRKO WANT TO KEEP RIGIDITY ON PAD.

I INFORM C. BOULÉ. HE WANTS TO WAIT FROM THE FIELD TO GET ANY INFO BEFORE EVALUATING WHETHER THEY NEED THESE EXTRA HOLES OR NOT. M. ZELCA INFORMED.

P.B. 08 08 19

I INFORM M. Z. & S. B. TO WAIT TO TRIGGER EO FOR 2 MORE HOLES.

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Reviewed & approved by: /		2006 09 09


#### E- VERIFICATION

Verified Elements :	By/
• PERFORMED CHANGES MEET ORIGINAL REQ'TS	date :
• DWGS & PRODUCTS CHANGED ACCORDING TO	NB/08/12/06
ECO#3 & TO SERVICE BULLETION 080811 rev a.	

#### F- VALIDATION

Validated Elements :	By/
AFTER OVER 4 MONTHS APPLICATION IN THE FIELD,	date : NB
CUSTOMER HAS HAD NO COMMENTS, SO IT IS	08/12/06
CONCLUDED THAT THE SOLUTION HAS MET	
THE NEEDS. AS THERE WOULD HAVE BEEN	
IMMEDIATE REQUEST FOR CHANGE SHOULD IT NOT HAVE WORKED.	
(MULTIPLE REQUESTS FOR FEEDBACK WERE ISSUED TO CUSTOMER)	

#### G- CLOSURE

I confirm that the designated change has been performed successfully :
Signature :  /date : Dec 6, 2008

Dec 6, 2008

- I MADE A CALL TO C. BOULÉ IN MID-SEPT TO CHECK IF SOL'N BROUGHT SATISFACTION TO PILOTS. HE HAD HAD NO FEEDBACK. WE AGREED THAT I CONTACT HIM AGAIN AFTER MY VACATIONS (END SEPT-EARLY OCT.). I ASKED TO BE PUT IN CONTACT WITH THE USERS, BUT C. BOULÉ PREFERRED TO WAIT.
- OCT 15, 08. I SEND EMAIL TO C. BOULÉ TO FIND OUT AGAIN IF OUR SOLUTION DID WORK TO SATISFY THEIR TEAM. (SEE ATTACHED COPY). - I GOT NO REPLY.
- DEC 2, 08. I GET CALL FROM SYLVAIN MIRON. HE WANTS TO KNOW IF ISSUE HAS BEEN SOLVED TO ORDER NEW PAIR. I TELL HIM. I TELL HIM THAT WE NOW OFFER THE STREAMLINED PIERCED EXACTLY LIKE THE ECO THAT WAS ISSUED LAST SUMMER TO CORRECT THEIR PADS. I AM STILL AWAITING FEEDBACK FROM THEM; (BUT SINCE THERE WAS NO MORE COMMENTS FOR ANOTHER 4 MONTHS OF FIELD OPERATIONS, IT LEADS TO UNDERSTAND THAT IT IS DOING THE JOB WELL.). I TOLD THEM I CAN SHIP A PIERCED KIT IMMEDIATELY. THEY PLACED AN ORDER (F2966).
- DEC 6, 08. I DECIDE TO CLOSE THIS ECO. SINCE WE HAVE ADDRESSED THE SUCCION ISSUE; AND IT WAS DONE BY PROFESSIONAL EVALUATION OF IDEAL NO OF HOLES & SIZE. WE HAVE ASKED CUSTOMER TO PROVIDE US WITH FEEDBACK MANY TIMES, WITHOUT GETTING IT OFFICIALLY. CONSIDERING THAT THE PADS HAVE BEEN PIERCED 4 MONTHS AGO AND THAT THE PILOTS CONTINUED TO WORK IN THE SAME CONDITIONS, AND THAT NO OTHER COMMENT WAS ISSUED FROM THEM DURING THIS TIME, I CONCLUDE THAT THE ACTIONS TAKEN HAVE PROVEN CORRECT TO SOLVE THE SUCCION ISSUE. I THUS CLOSE THIS CASE. NB

## Nathalie Barbeau

**From:** Nathalie Barbeau [nbarbeau@helitowcart.com]

**Sent:** October 15, 2008 3:13 PM

**To:** 'CBoule@canadianhelicopters.com'

**Cc:** 'info@helitowcart.com'

**Subject:** Helitowcart: Suivi du dossier des BearPaws

Bonjour M. Boulé,

Pour faire suite à notre dernière conversation, je vous contacte un mois plus tard pour avoir de vos nouvelles relativement aux bearpaws pour les AS350. Il était trop tôt lors de notre conversation en septembre pour obtenir un feedback. Nous nous demandons si vous seriez en mesure de nous en donner un maintenant.

Nous espérons sincèrement que votre équipe est satisfaite des modifications apportées pour réduire les chances de succion.

Nous voulons nous assurer que le modèle révisé avec les trous vous convienne.

Nous désirons satisfaire Hélicoptères Canadiens à long terme pour ses besoins en pattes d'ours et tenons donc à nous assurer que notre produit convienne dorénavant à vos besoins.

Nous serions heureux d'obtenir de vos nouvelles puisque nous nous préparons à effectuer les modifications sur notre stock en main de pads afin d'être prêts à vous servir rapidement à la prochaine occasion.

Je vous remercie de l'attention portée à ce dossier.

Salutations chaleureuses,

Ms Nathalie Barbeau  
General Manager

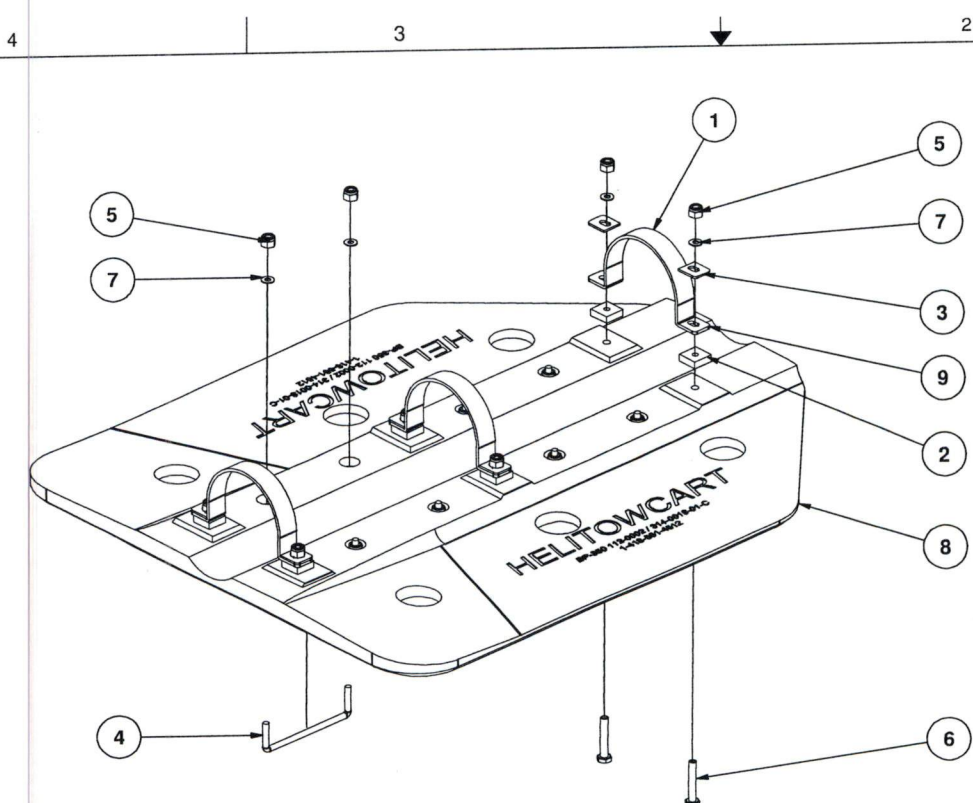
**Helitowcart** (Vanair inc.)  
860 Marie-Victorin, St-Nicolas, Levis,  
Quebec, Canada, G7A 3S9  
tel: +1 418 561 4512  
fax: +1 418 531 0772  
[nbarbeau@helitowcart.com](mailto:nbarbeau@helitowcart.com)  
[info@helitowcart.com](mailto:info@helitowcart.com)  
[www.helitowcart.com](http://www.helitowcart.com)

JAN. 8, 2009

- Can. Heni HAS PURCHASED A NEW PAIR WITH THE  
PIERCED HOLES

- I CONSIDER THAT THEY ARE SATISFIED.

JP



1		DWG No 112-0002-00-5				1		SHT No OF 1	
REVISIONS									
1 RERWORKABLE		2 NONREWORKABLE		3 NOTED		4 NA			
ZONE		REV		DESCRIPTION				DR. & DATE	
		A		ADDITION OF STREAMLINE PAD CONFIGURATION				STRESS	
		B		ADDITION OF VENT HOLES ON THE STREAMLINE PAD					
		C		MODIFICATION OF VENT HOLES ON THE STREAMLINE PAD					

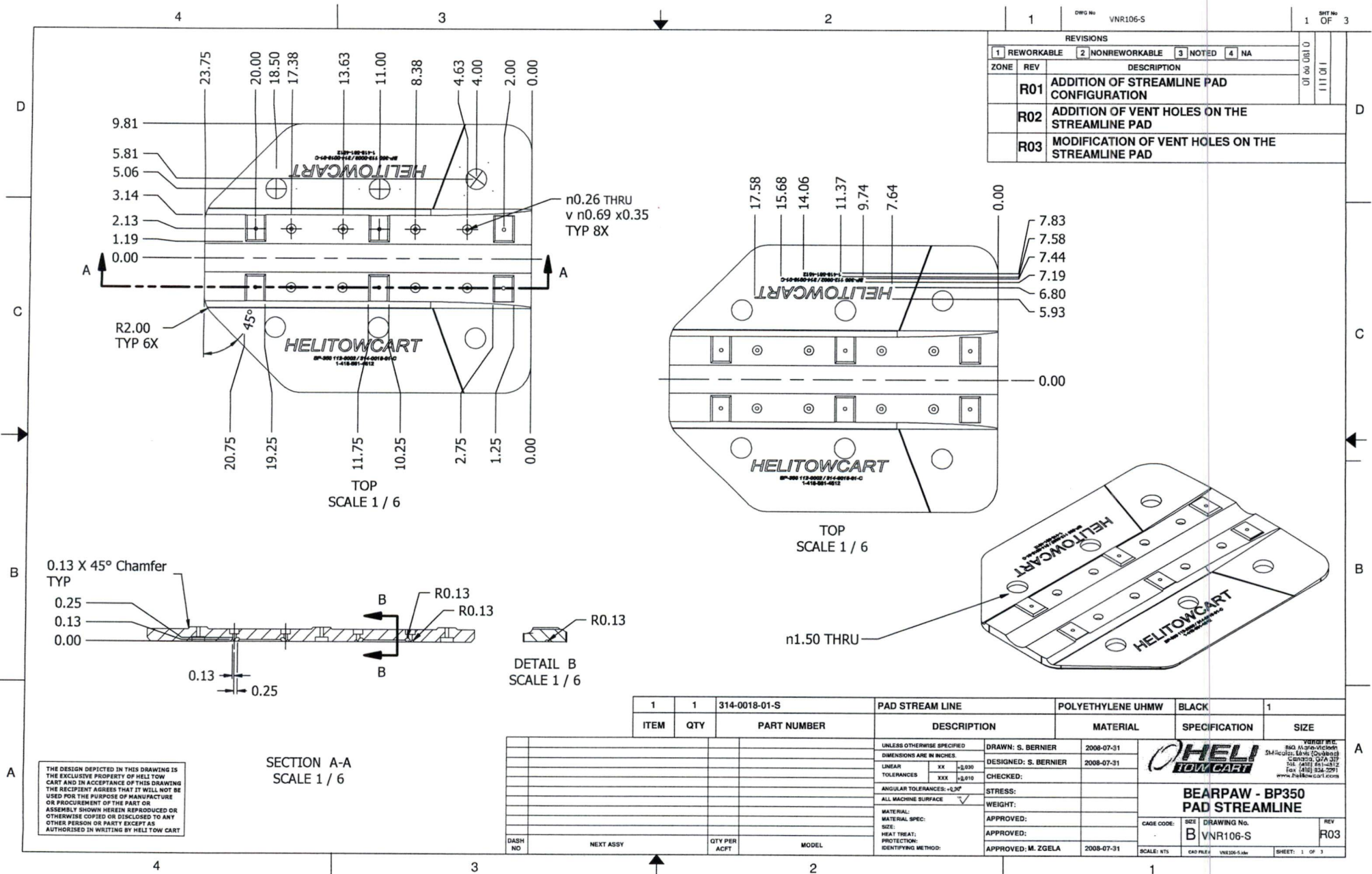
NOTE: ICEBLADE ASSEMBLY, ITEM4, CAN BE OMITTED FROM INSTALLATION (OPTIONAL)

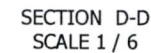
1	3	314-0019-15	U SHAPED CLIP	STE
2	6	314-0012-01-A	FILLER BLOCK	STE
3	6	314-0007-15-B	SLOTTED CLIP SUPPORT	STE
4	4	314-0005-15-A	ICE BLADE ASSEMBLY	STE
5	14	262-0001-17-A	MD20365-42B	STE
6	6	261-0001-17-A	AN4-14A	STE
7	20	263-0001-17-A	AN960-416	STE
8	1	314-0018-01-S	PAD STREAM LINE	POLY
9	1	314-0021-01-A	SHRINK	
ITEM	QTY	PART NUMBER	DESCRIPTION	


			UNLESS OTHERWISE SPECIFIED			DRAWN: S. BERNIER		
			DIMENSIONS ARE IN INCHES.			DESIGNED: S. BERNIER		
			LINEAR		XX	+0,030	CHECKED:	
			TOLERANCES		XXX	+0,010		
			ANGULAR TOLERANCES: ± 30°					
			ALL MACHINE SURFACE				✓	STRESS:
								WEIGHT:
			MATERIAL:					APPROVED:
			MATERIAL SPEC:					APPROVED:
			SIZE:					APPROVED:
			HEAT TREAT:					APPROVED: M. ZGELA
			PROTECTION:					
			IDENTIFYING METHOD:					
DASH NO	NEXT ASSY	QTY PER ACFT	MODEL					

THE DESIGN DEPICTED IN THIS DRAWING IS THE EXCLUSIVE PROPERTY OF HELITOWCART AND IN ACCEPTANCE OF THIS DRAWING THE RECIPIENT AGREES THAT IT WILL NOT BE USED FOR THE PURPOSE OF MANUFACTURE OR PROCUREMENT OF THE PART OR ASSEMBLY SHOWN HEREIN REPRODUCED OR OTHERWISE COPIED OR DISCLOSED TO ANY OTHER PERSON OR PARTY EXCEPT AS AUTHORIZED IN WRITING BY HELITOWCART

Documents & Jore  
BP350 S (4108)



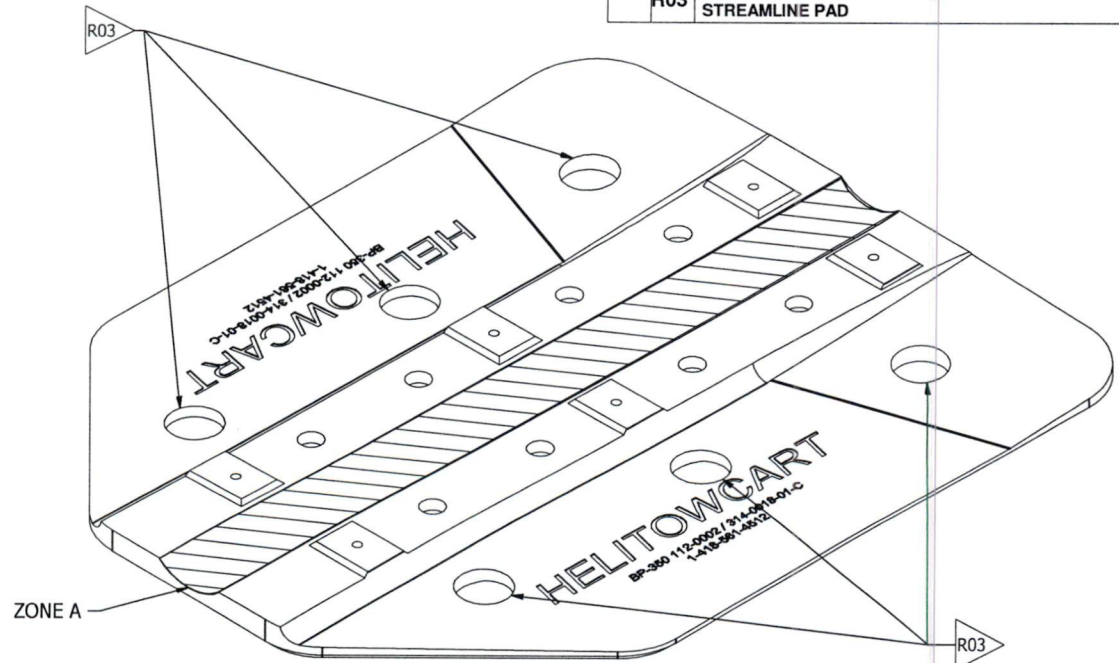


DRAWN: S. BERNIER	2008-07-31	 <div style="float: right; text-align: right;"><b>Varner Inc.</b> Parts, Sales &amp; Service 16411 16th Avenue S.E. Everett, WA 98203 Tel: (425) 851-4312 Fax: (425) 858-2271 <a href="http://www.helltowcart.com">www.helltowcart.com</a></div>			
DESIGNED: S. BERNIER	2008-07-31				
CHECKED:					
STRESS:					
WEIGHT:		<div style="text-align: center;"><b>BEARPAW - BP350</b> <b>PAD STREAMLINE</b></div>			
APPROVED:					
APPROVED: M. ZGELA	2008-07-31				
		CAGE CODE:	SIZE	DRAWING No.	REV
			B	VNR106-S	R03
		SCALE: NTS	CAD FILE: E:\VNR200-S.dwg		SHEET: 2 OF 3


1. ZONE D = ALL NON-SHADED AREA



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ISO

				UNLESS OTHERWISE SPECIFIED		DRAWN: S. BERNIER		2008-07-31		 <div style="float: right; font-size: 0.8em;">             Yanco, Inc.              1140 Alameda Avenue              1st Floor, Suite 200              San Jose, CA 95126              Tel: (408) 241-2727              Fax: (408) 241-2727              www.helitowcraft.com           </div>	
				DIMENSIONS ARE IN INCHES.		DESIGNED: S. BERNIER		2008-07-31			
				LINEAR TOLERANCES XX $\pm 0.030$ XXX $\pm 0.010$		CHECKED:					
				ANGULAR TOLERANCES: $\pm 0.04^\circ$ ALL MACHINE SURFACE <input checked="" type="checkbox"/>		STRESS:					
				MATERIAL:		WEIGHT:				<b>BEARPAW - BP350 PAD STREAMLINE</b>  CASE CODE:    SIZE <b>B</b> DRAWING No. <b>VNR106-S</b> REV <b>R03</b>	
				MATERIAL SPEC:		APPROVED:					
				SIZE:		APPROVED:					
				HEAT TREAT:		APPROVED: M. ZGELA		2008-07-31			
				PROTECTION:						SCALE: NTS    CAD FILE: VNR106-1.dwg    SHEET: 3 OF 3	
				IDENTIFYING METHOD:							
DASH NO	NEXT ASSY	QTY PER ACF	MODEL								

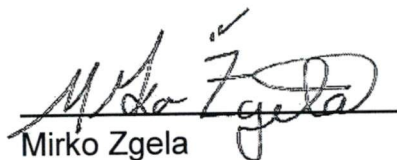
## Master Document List

Helitowcart

### Eurocopter Model AS 350/355 Series Helicopters Installation of BearPaw Model BP350

Report: HTC-MDL-BP-AS350/355-1000 (Rev E)

APPROVED BY:

  
Mirko Zgela

DATE: AUG 01, 2008

Design Approval Representative DAR #310

Revision	Revision Date	Revision of Entry	Entered by
A	Nov 22, 2006	Initial issue	N/A
B	Jan 28, 2007	Revision performed to the Installation Instructions (Doc # HTC-314-0020-00-B).	M.Z.
C	Feb 28, 2007	Addition of streamline pad configuration.	M.Z.
D	July 27, 2008	Addition of vents holes in the streamline pad.	M.Z.
E	Aug 01, 2008	Modification of vents holes in the streamline pad.	M.Z.

## 1.0 MASTER DOCUMENTS

Document #	Title	Revision Status	Approval by	Date
AAC-CPL-BP-AS350/355-1000	Compliance Plan – Eurocopter Model AS350/355 Series Helicopters – Installation of BearPaw Model BP350	NC	DAR 310	Nov 22, 2006
HTC-314-0020-00-C	BearPaw Model BP350 – Installation Instructions – AS350/355 Series Helicopters	D	DAR 310	Feb 28, 2008
AAC-STR-BP-AS350/355-1000	Structural Substantiation – Helitowcart Inc. BearPaw Model BP350	NC	DAR 310	Nov 20, 2006
AAC-FTR-C-GZNC	Simple External Modification – Applicant's Flight Test Plan/Report	NC	DAR 310	Nov 21, 2006
HTS-EO-0709-002	Bear Paw Model BP350 Vent Holes	A	DAR 310	July 31, 2008
HTC-MEM-0709-001	Memorandum – Vent Hole BP350 BearPaw	A	DAR 310	July 31, 2008

## 2.0 MASTER DRAWINGS

Drawings #	Title	Revision Status	Approval by	Date
112-0002-00	BearPaw BP350 - Assembly	B	DAR 310	Nov 20, 2006
112-0002-00-S	BearPaw BP350 – Assembly Streamline	C	DAR 310	July 31, 2008
VNR084	BearPaw – Iceblade	R01	DAR 310	Apr 24, 2006
VNR085	BearPaw – Iceblade Threaded Rod	R01	DAR 310	Apr 24, 2006
VNR086	BearPaw – Iceblade Assembly	R01	DAR 310	Apr 24, 2006
VNR106	BearPaw BP350 - Pad	R02	DAR 310	Sept 26, 2006
VNR106-S	BearPaw BP350 – Pad Streamline	R03	DAR 310	July 31, 2008
VNR107	BearPaw BP350 – U Shaped Clip	R01	DAR 310	Sept 29, 2006
VNR089	Bearpaw – Slotted Clip Support	R04	DAR 310	July 31, 2006
VNR099	Filler Block 1/4"	R01	DAR 310	Aug 8, 2006

**3.0 REFERENCE DOCUMENTS**

Document #	Title	Revision Status	Approval by	Date
314-0009-01-A	Ultra High Molecular Weight Polyethylene – Typical Properties	A	N/A	May 24, 2006
314-0008-01-A	Propriétés du UHMW TIVAR	A	N/A	May 24, 2006
314-0017-05-A	Heat Shrink Specifications	A	N/A	Sept 6, 2006

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Pre-Flight	p.6
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500 Hour or Yearly Inspection Details	p.6
Overhaul Requirements	p.6
 <b>REVISIONS &amp; APPROVAL</b>	 <b>p.7</b>
Annex A (BearPaw Assembly Drawing)	
Annex B (BearPaw Pad Drawing)	

## INTRODUCTION

### Scope

This installation instruction describes the step-by-step approach to install and to perform maintenance of the Helitowcart BearPaw Model BP 350 (P/N 112-0002-00 or P/N 112-0002-00-S) for the AS 350 and AS 355 series helicopters.

### General

The Helitowcart BearPaw is made of machined UHMW TIVAR® polymer sheet. This material combines high-impact performance, low friction and good resistance to chemical. Its high durability will provide superior performance when installed on your helicopter. Any question regarding the Helitowcart BearPaw system shall be directed to Helitowcart Customer Support as indicated in Table (1):

**Table 1 – Helitowcart Customer Support**

Care of	Mailing Address	Phone, Fax & Email:
Customer Support Helitowcart BearPaw Helitowcart (Vanair inc)	860 Marie-Victorin St-Nicholas, Levis, Quebec, Canada, G7A 3S9	Tel:1 (418) 561-4512 Fax:1 (418) 836-2291 <a href="mailto:info@helitowcart.com">info@helitowcart.com</a>

### Helicopter Effectivity

This installation instruction applies to the following helicopter models:

**Table 2 – Helicopter Model Effectivity**

Make	Model	Transport Canada Type Certificate Data Sheet
Eurocopter	AS 350 D	H-83
Eurocopter	AS 350 D1	
Eurocopter	AS 350 B	
Eurocopter	AS 350 B1	
Eurocopter	AS 350 B2	
Eurocopter	AS 350 B3	
Eurocopter	AS 350 BA	
Eurocopter	AS 355 E	H-87
Eurocopter	AS 355 F	
Eurocopter	AS 355 F1	
Eurocopter	AS 355 F2	
Eurocopter	AS 355 N	

## Installer Responsibilities

The installer shall ensure that the installation of the Helitowcart BearPaw does not conflict with any other part of the helicopter configuration. Technicians performing this installation should be familiar with A/C work and should have been familiarized with the different Helitowcart BearPaw system components prior to performing a first time installation. All steps in this procedure must be followed. Deviations from the procedures may result in potential structural failure or equipment malfunction and will result in a non-compliant installation.

## INSTALLATION

### BearPaw Installation

#### Reference Documentation:

- [1] Helicopter Maintenance Manual AS 350 or AS 355 as applicable.

#### Step 1: Helicopter Preparation

- Ensure the helicopter is safe for maintenance;
- Lift the helicopter using the manufacturer recommended practice provided in Ref [1] as applicable to your helicopter model to allow a ground clearance of the skid in the area of the aft cross tube of approximately 1 ½" (38mm);

**Note:** The BearPaw Model BP350 (P/N 112-0002-00 or P/N 112-0002-00-S) can be installed with or without the skid tube wear shoes.

#### Step 2: IceBlade Installation

**Note:** The BearPaw Model BP350 (P/N 112-0002-00 or P/N 112-0002-00-S) can be installed with or without the IceBlades

- With IceBlade Option
- Install ice blades (Qty: 4) (Iceblades P/N 314-0005-15) under BearPaw pad as per drawing (112-0002-00 or 112-0002-00-S) provided at Annex A.
- Secure ice blades with washer (Washer P/N 263-0001-17) and nut (P/N 262-0001-17).

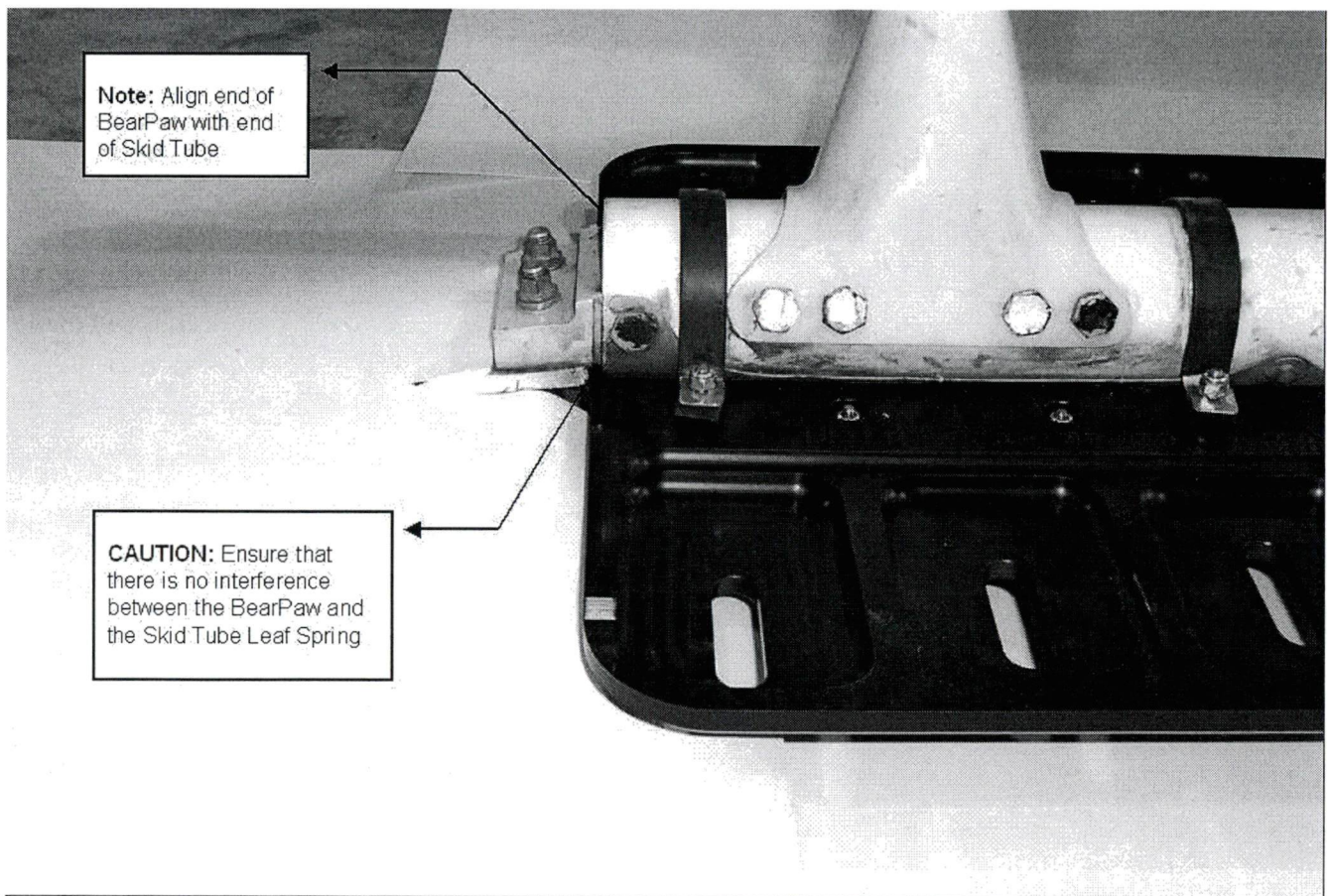
#### Step 3: BearPaw Installation

- Position the BearPaw under the skid as shown in Figure 1 with narrow edge pointing forward.
- Insert washers (P/N 263-0001-17) through all six bolts: 6x(261-0001-17);
- Insert bolts (P/N 261-0001-17) and washer (Washer P/N 263-0001-17) through BearPaw pad as per drawing (112-0002-00 or 112-0002-00-S) provided at Annex A;
- Insert filler blocks (P/N314-0012-01) as per drawing (112-0002-00 or 112-0002-00-S) provided at Annex A;

**Note:** The use of filler blocks (P/N314-0012-01) may be replaced or complemented by the use of washers (P/N 263-0001-17) to fill in the gap. Bolts (P/N 261-0001-17) may be replaced by longer or shorter AN4 bolts as required.

- Insert both U-shaped clips (P/N 314-0019-15) through bolts: 6x(261-0001-17);
- Insert slotted clip supports (P/N 314-0007-15) through all six bolts. Position slotted clip supports with rounded edge toward helicopter skid;
- Insert washer (P/N 263-0001-17) & screw nuts (P/N 262-0001-17) for a tight fit. Max. torque on nuts 60 in.-lb;
- Remove helicopter from lift;
- Amend Weight & Balance records as required using data provided in Table 3.

**Figure 1 – BearPaw Model BP350 (P/N 112-0002-00 or P/N 112-0002-00-S) - Alignment on Skid**



### BearPaw Removal

#### Step 1: Helicopter Preparation

- Ensure the helicopter is safe for maintenance;
- Lift the helicopter using the manufacturer recommended practice provided in Ref [1] to allow a clearance of the skid in the area of the aft cross tube of approximately 1 ½" (38mm);

#### Step 2: BearPaw Removal

- Remove nuts (P/N 262-0001-17), slotted clip support (P/N 314-0007-15) on U-shaped clips (P/N 314-0019-15),
- Remove washers (P/N 263-0001-17), U-shaped clips (P/N 314-0019-15), filler blocks (P/N 314-0012-01), and remove BearPaw pad (P/N 314-0018-01);
- Inspect skid tubes to confirm serviceability
- If the skid tube shoes have been removed, re-install shoes as per reference [1];
- Complete installation by putting helicopter back to normal position by removing lift status;
- Amend Weight & Balance records as required using data provided in Table 3.

### Weight & Balance

The following information should be used to amend the helicopter weight and balance information following the installation or removal:

**Table 3 – Weight & Balance Data**

Item	Weight	Lateral		Longitudinal	
		Arm	Moment	Arm	Moment
Helitowcart BearPaw Model BP350 (P/N 112-0002-00)	19,9 Lb 9,0 Kg	N/A	N/A	182,0 in. 462,2 cm	3621,8 in-lb 41,6 m-kG
Helitowcart BearPaw Model BP350 - Streamline (P/N 112-0002-00-S)	18,3 Lb 8,5 Kg	N/A	N/A	182,0 in. 462,2 cm	3330,6 in-lb 39,3 m-kG

Note: Weight and moment provided are for full kit installation.

### Parts Lists

The Helitowcart BearPaw detailed parts list is as follow:

**Table 4 – Parts List**

Description	Qty	Part No.	Drawing no./name
<b>BearPaw Model BP350</b>	<b>1</b>	<b>112-0002-00</b>	<b>VNR(112-0002-00) / BearPaw Assembly</b> <b>VNR (112-0002-00-S) /Bear Paw Streamline Assembly</b>
BearPaw pad <sup>(1)</sup>	1	314-0018-01	VNR106 / BearPaw BP350 – Pad
BearPaw pad streamline <sup>(1)</sup>	1	314-0018-01S	VNR106S / BearPaw BP350 – Pad Streamline
U Shaped Clips	3	314-0019-15	VNR107 / BearPaw BP350 - U Shaped Clips
Slotted Clip Support	6	314-0007-15	VNR089 / BearPaw - Slotted Clip Support

Filler blocks 1/4"	6	314-0012-01	VNR099 / BearPaw – Filler block 1/4"
Bolts	6	261-0001-17	Bolt- AN4-14
Nuts	6	262-0001-17	Nut- MS20365-428
Washers	12	263-0001-17	Washer – AN960-416
Shrink	3	314-0021-01	BearPaw – Shrink Specifications & Install.(1"x6.25")
<b>IceBlade Option Model OIB</b>	<b>4</b>	<b>314-0005-15</b>	<b>VNR086 / IceBlade Assembly</b>
Nuts	8	262-0001-17	Nut- MS20365-428
Washers	8	263-0001-17	Washer – AN960-416

Note (1): Use BearPaw Pad P/N 314-0018-01 for VNR P/N 112-0002-00 and BearPaw Pad P/N 314-0018-01-S for VNR P/N 112-0002-00-S as applicable.

## INSPECTION

### Life Limited Items

Three are no life limited items for the Helitowcart BearPaw.

### Pre-Flight

Before each flight the following items should be inspected:

- Check that attachment bolts are installed and secured,
- Check that BearPaws are free from visible damage,
- If damage is found, verify allowable damage according to:  
 Table 5 – Tolerances for cracks & wear and  
 Annex B – BearPaw Allowable Damage Drawing (VNR106 page 2 of 2 or VNR 106S page 2 of 2)

### Periodic Inspection Schedule

- The Helitowcart BearPaw shall be inspected every 500 flying hours or yearly whichever comes first.
- The Helitowcart BearPaw can be inspected concurrently with the helicopter landing gear inspection.
- Recommended tolerance for performance of inspection is +/- 10% of the 500 hours period.
- Following an inspection, subsequent interval shall be adjusted to meet the original schedule from time of inspection. If inspection is performed earlier than the 10% tolerance, then following inspections shall be scheduled not to exceed the above mentioned tolerance.

### 500 Hour or Yearly Inspection Details

- Remove Helitowcart BearPaw: See Section "BearPaw Removal",
- Inspect all parts for damage & wear. See table & figure below for allowable damage,
- Replace all damaged parts,
- Replace parts worn beyond the tolerances indicated below.
- See Tolerances for cracks & wear:  
 Table 5 – Tolerances for cracks & wear, &  
 Annex B – BearPaw Allowable Damage Drawing (VNR106 page 2 of 2 or VNR 106S page 2 of 2)

**Table 5 – Tolerances for Cracks & Wear**

Zone	Nominal Dimension (Inches)	Allowable Damage/Wear (Inches)	Cracks
A	0,50	0,050	
B	1,000	0,250	

C	0,375	0,075	<u>Pockets</u> : Cracks are acceptable in the Helitowcart BearPaw pocket areas to a maximum length of 0,5" provided they are 0,25" away from the stiffener radius change. Stop drill cracks with a 0,125" hole.
D	0,50	None	<u>Stiffeners</u> : NO cracks in stiffeners.
E	0,375	0,075	<u>For P/N 112-0002-00-S Only</u>

### Overhaul Requirements


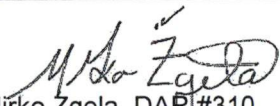
- Not applicable for the designated application of this device.

## REVISIONS & APPROVAL

### Revisions

Date	Rev	Nature of Revisions
Nov 20, 2006	A	Initial issue
Jan 29, 2007	B	Minor editorials. Change to weight & Balance Data to reflect production model. Change in inspection schedule from 300 to 500 hours to match existing landing gear periodicity.
Feb 28, 2008	C	Introduction of new streamline BearPaw Pad configuration as alternate.
Aug 01, 2008	D	Modification of vent holes on the streamline pad

### Approval

Internal Approval :		
Helitowcart inc.	 Lucien Barbeau, President	Feb 28, 2008 Date:
External Approval :		
Transport Canada	 Mirko Zgela, DAR #310	Feb 28, 2008 Date:

**Annex A**

See: BearPaw Assembly, drawing no. (112-0002-00) or;  
BearPaw Assembly, drawing no. (112-0002-00-S)

**Annex B**

See: BearPaw Pad, drawing no. VNR106. Page 2 of 2 or;  
BearPaw Pad, drawing no. VNR106-S. Page 2 of 2.

**Annex A**

BearPaw Assembly, Drawing no. VNR(112-0002-00).  
P/N 112-0002-00



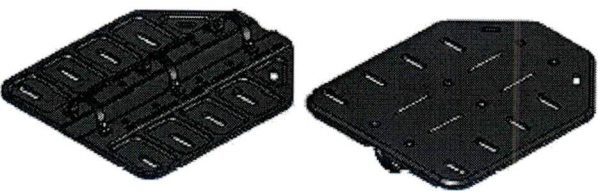
BY VANAIR

# Installation Instructions – AS350/355

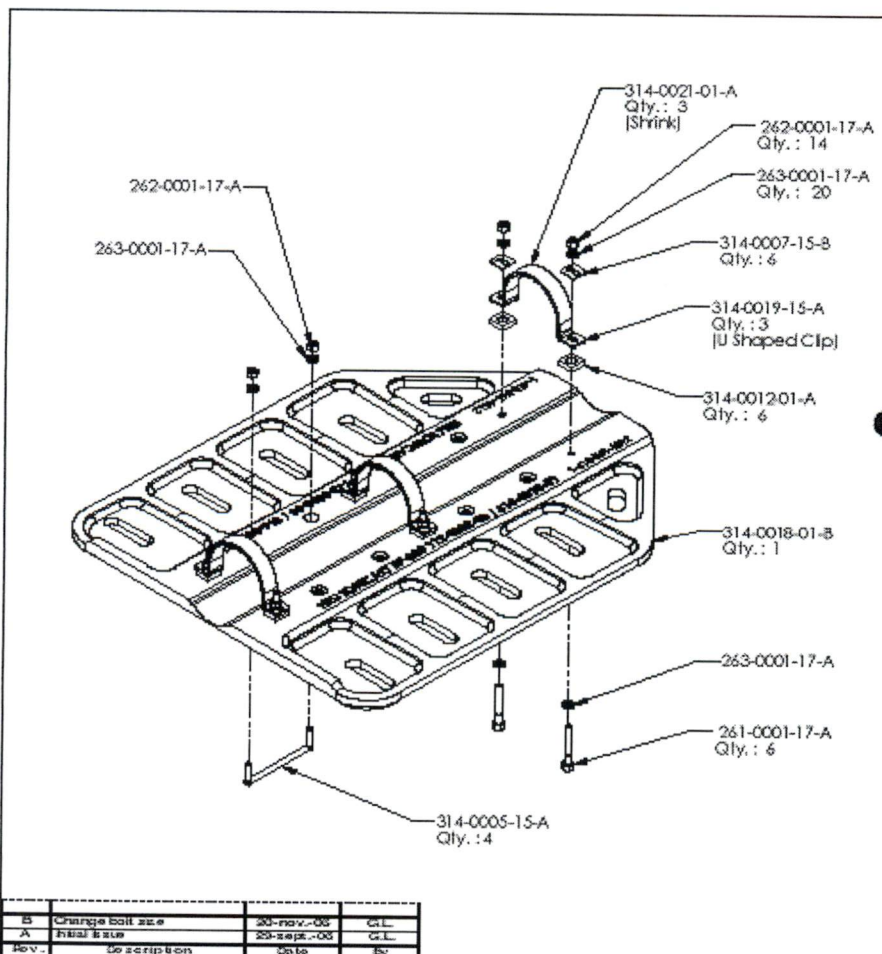
314-0020-00-C

BearPaw Model BP350

No.	Qty.	Description	Part #	Rev #
1	1	Bearpaw BP-350 - Pad	314-0018-01	B
2	3	Bearpaw BP-350 - U shaped clip	314-0019-15	A
3	3	Bearpaw BP-350 - Shrink 1" x 6 1/4"	314-0021-01	A
4	6	Bearpaw - Slotted clip support	314-0007-15	B
5	6	Bearpaw - Filter Block 1/4"	314-0012-01	A
6	4	Bearpaw - Iceblade Assembly	314-0005-15	A
7	6	Bolt AN4-14A	261-0001-17	A
8	20	Washer AN960-416	263-0001-17	A
9	14	Nut MS20365-428	262-0001-17	A



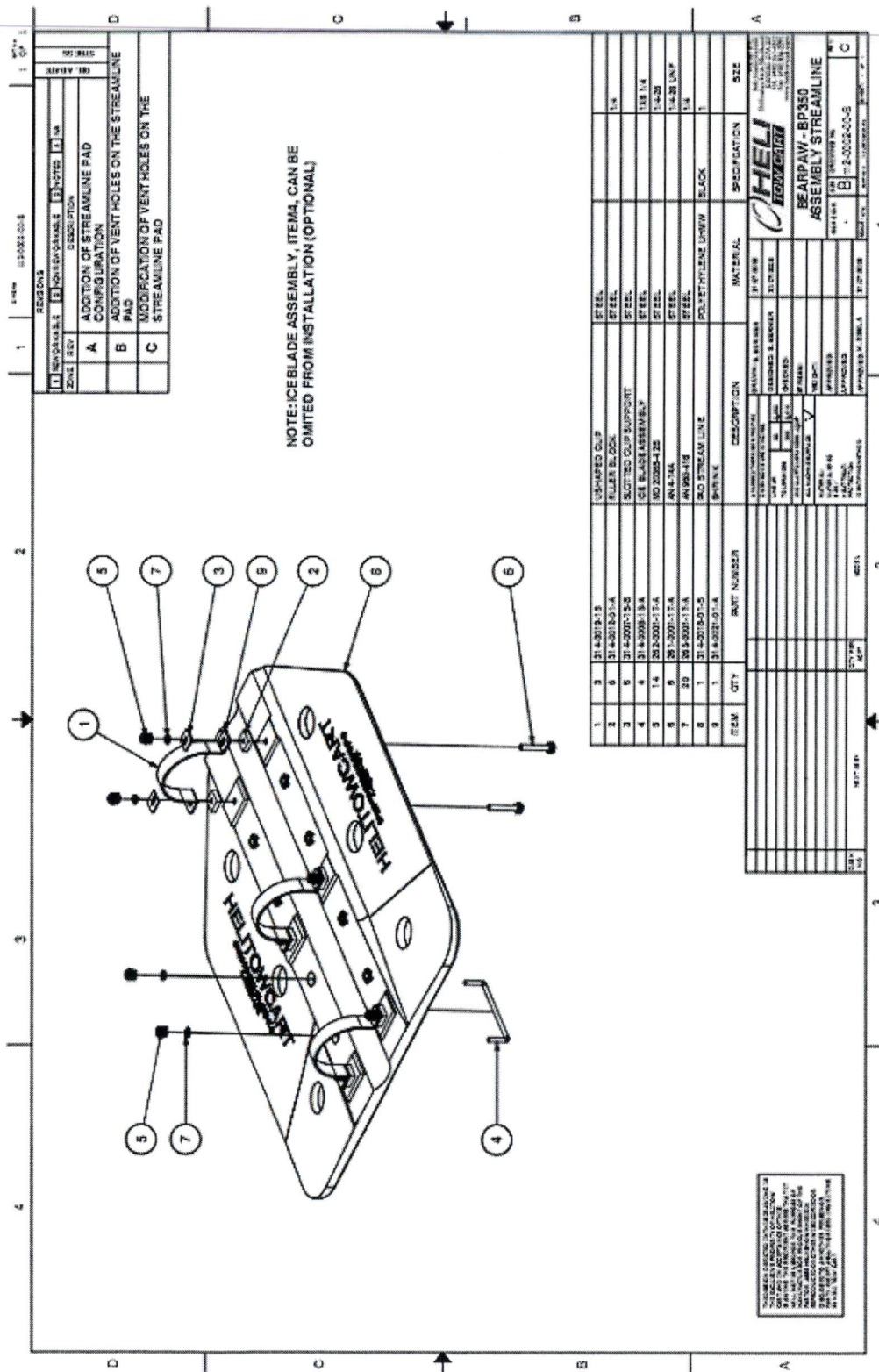
Note : Iceblade assembly can be omitted from installation (Optional)



	<b>Vanair Inc.</b> 860 Marie-Victorin 2nd Floor Saint-Jovite, QC J0V 1A0 Tel: 819 359-2291 Fax: 819 359-2292 www.vanair.com		DISCLOSURE OF INFORMATION TO CUSTOMERS VAN AIR INC. MAKES NO WARRANTY OR ENDORSEMENT OR RECOMMENDATION IS NOT TO BE USED FOR ANY OTHER PURPOSES		
	<b>Bearpaw BP-350 - Assembly</b>				
DATE OF THIS DOCUMENT	11/20/2016	REVISED DATE	1/4	REVISED BY	1
DATE OF THIS DOCUMENT	11/20/2016	DATE OF THIS DOCUMENT	11/20/2016	DATE OF THIS DOCUMENT	11/20/2016
DATE OF THIS DOCUMENT	11/20/2016	DATE OF THIS DOCUMENT	11/20/2016	DATE OF THIS DOCUMENT	11/20/2016

**Annex A**

BearPaw Assembly, Drawing no. VNR(112-0002-00-S).  
P/N 112-0002-00-S



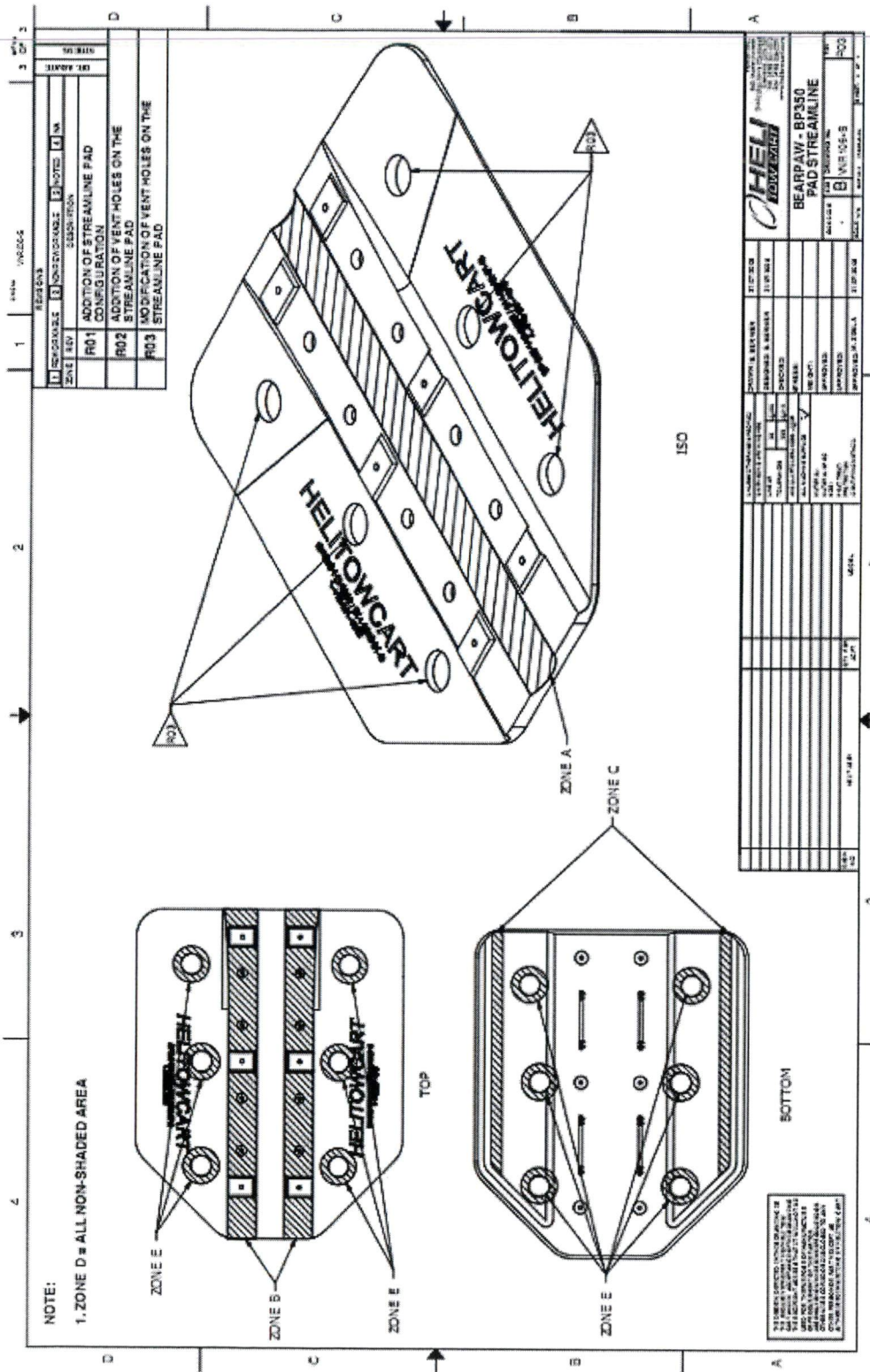
**Annex B**

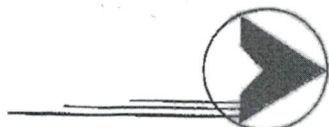
BearPaw Pad, Drawing no. VNR106. Page 2 of 2.  
P/N 314-0018-01



**Annex B**

BearPaw Pad, Drawing no. VNR106S. Page 2 of 2.  
P/N 314-0018-01-S

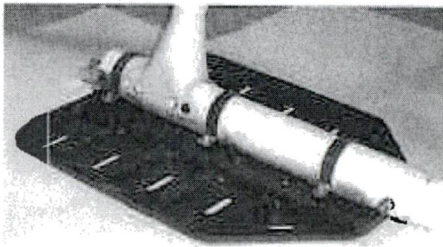




# Aviatech Technical Services Inc.

3005 rue Lindbergh  
Trois-Rivières, Québec  
G9A 5E1

## Technical Memorandum

<b>Title:</b> Structural Substantiation - BearPaw Streamline BP350				<b>TM#</b> HTC-MEM-0709-001 Rev_A	
<b>Prepared by:</b>  Simon Bernier	<b>Design:</b>  Simon Bernier	<b>Mech:</b>  N/A	<b>Stress:</b>  Simon Bernier	<b>Approved:</b>  Mirko Zgela (DAR #310)	<b>Date:</b>  July 31, 2008
<b>A/C Effectivity</b>		<b>Registration:</b> N/A		<b>Serial#:</b> N/A	
<b>Reference Documents:</b>					
[1] 314-0020-00 Rev E, BearPaw Model BP350 – Installation Instructions - AS350/355 Series Helicopter, dated Apr 08, 2010 [2] AAC-STR-BP-AS350/355-1000, Structural Substantiation – Helitowcart (Vanair Inc.) BearPaw Model BP350, dated Nov 20, 2006 [3] 314-0008-01-A, Propriétés de l'UHMW TIVAR, dated May 25, 2006					
<b>Applicable Drawings:</b>					
[1] 112-0002-00-S Rev C, BearPaw BP350 - Assembly Streamline, dated Jul 31, 2008 [2] VNR106 Rev 02, BearPaw BP350 – Pad Streamline, dated Jul 31, 2008					
<b>Background:</b> The Helitowcart BearPaw is made of machined UHMW TIVAR® polymer sheet. This material combines high-impact performance, low friction and good resistance to chemical. Its high durability will provide superior performance to your Eurocopter helicopter.					
<b>Description of Change:</b> The new Bearpaw Pad (P/N 314-0018-01 (VNR106-S)) has a new profile is made to ensure that no rocks will get in to the top pocket. Figure 1 shows the original pad (P/N 314-0001-01).					
					
<p>Figure 1 - BearPaw 350 – Pad</p>					
<b>New configuration:</b> Figure 2 shows the new Bearpaw Pad Streamline (P/N VNR106-S).					

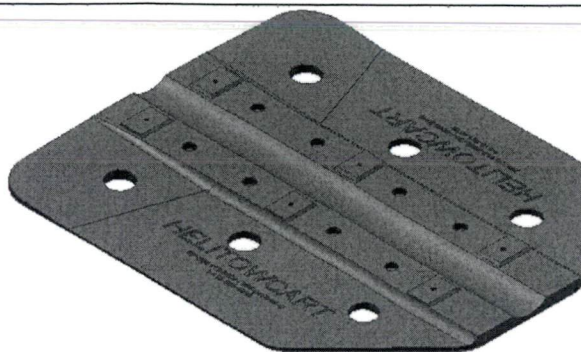
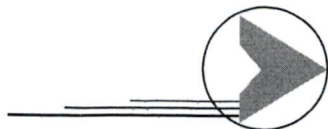


Figure 2 - BearPaw BP350 – Pad Streamline

### Structural Analysis:

The critical load case is taken from report AAC-STR-BP-AS350/355-1000. Since there are no other parts change in the assembly only the BearPaw Pad needs a new analysis. The analysis is made with Ansys 11.0 Workbench finite element model (FEM) software. Since the attachment hole geometry has not changed the bearing load will not be calculated.

The load (B) of 3310 lbs in the (Y) direction corresponds to the weight of the helicopter equally distributed under the BearPaw. The fixed support (A) Restrain the pad in the six degrees of freedoms. Figure 3 shows the loading condition. The model shows hole on one side only in order to compare the impact of those holes on the stress.

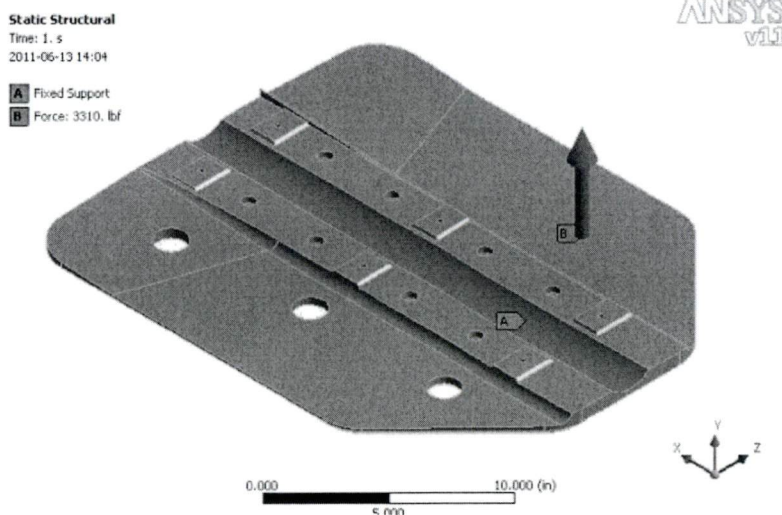
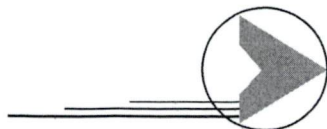


Figure 3 - BearPaw – Pad Streamline FEM Model



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G9A 5E1

### Equivalent Stress

Type: Equivalent (von-Mises) Stress

Unit: psi

Time: 1

01/08/2008 09:47

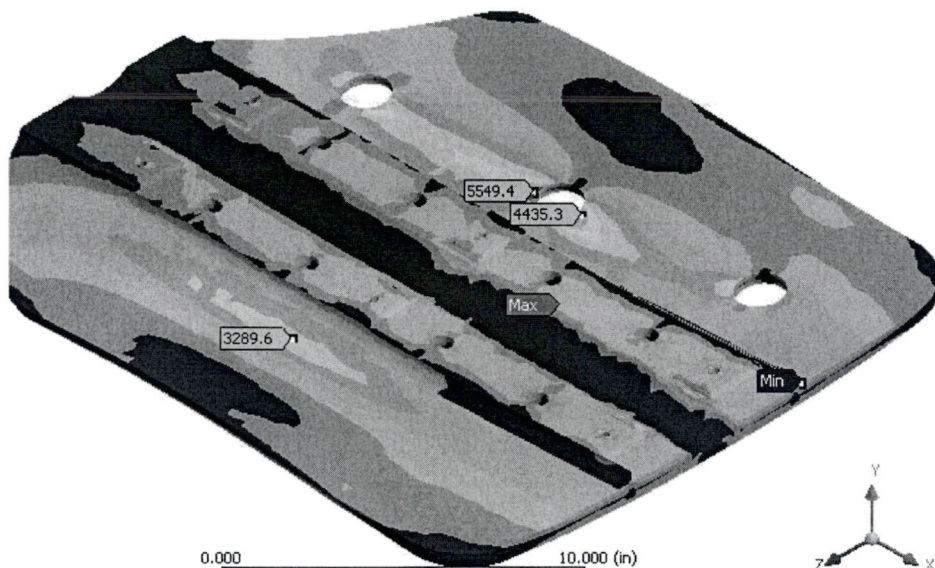
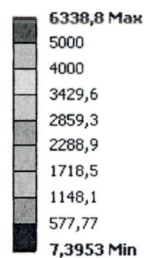


Figure 4 - BearPaw – Pad Streamline Von Mises Stress

The model shows that the Von Mises stress is 5549 Psi near the holes. But 5549 psi is not the reality since the value is located on a edge, if we take a closer look at the hole stress, see Figure 5, the stress is indeed lower 4435 psi.

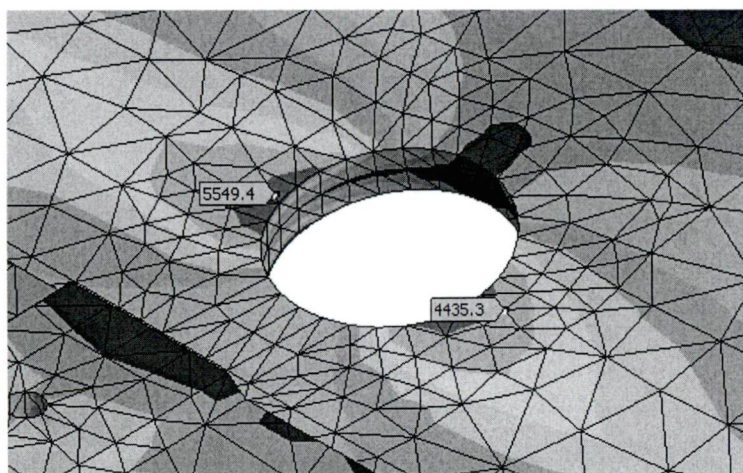


Figure 5 - BearPaw – Pad Streamline Holes Von Mises Stress

As such we have the margin of safety:

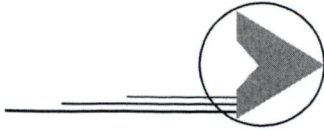
$$MS = (Ftu / (FS \times Fvm)) - 1$$

Where;

Ftu = Material ultimate tensile strength = 6800 psi<sup>1</sup>

FS = Factor to ultimate load = 1.5

<sup>1</sup> From 314-0008-01-A, Propriétés de l'UHMW TIVAR, dated May 25, 2006



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$F_{vm}$  = Von Mises maximum stress = 4435 psi

MS = 0.1

**Conclusion:**

The new BearPaw Pad is indeed structurally acceptable since the margin of safety (MS) is superior to "0".

**Installation Instructions:**

1	Refer to document 314-0020-00 Rev E, BearPaw Model BP350 – Installation Instructions - AS350/355 Series Helicopter, dated Apr 08, 20
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## BearPaw Model BP350

### Engineering Order

<b>Title:</b> Bear Paw Model BP350 Vent Holes				<b>EO#:</b> HTS-EO-0709-002 Rev A	
<b>Prepared by:</b> Simon Bernier	<b>Design:</b> N/A	<b>Mech:</b> N/A	<b>Stress:</b> N/A	<b>Approved:</b> Mirko Zgela (DAR #310)	<b>Date:</b> July 31, 2008
<b>A/C Effectivity:</b>	AS 350 D, B, B1, B2, B3 & BA AS 355				
<b>Reference Documents:</b>					
[a]	Drawings: #112-0002-00, BearPaw BP350 – Assembly, Rev C, dated July 31, 2008				
[b]	#VNR106-S, BearPaw BP350 Pad Streamline, Rev R03, dated July 31, 2008				
[c]	# HTC-MEM-0709-001, Memorandum – Vent Holes BP350 BearPaw, Rev A, dated July 31, 2008				
<b>Reason for change:</b>  To reduce the possibility for the BearPaw to stick to the ground while performing landing & take off on muddy terrain.					
<b>Description of change:</b>  To create a continuous path for the air, a number of holes are drilled into the Bear Paw pads.					
<b>Previous Configuration:</b>  The old configuration was as per drawing #VNR106-S, BearPaw BP350 Pad Streamline, Rev A, dated Feb 29, 2008					
<b>New Configuration:</b>  The new configuration of Bear Paw is as per drawing #VNR106-S, BearPaw BP350 Pad Streamline, Rev R03, dated July 31, 2008.					
<b>Structural substantiation:</b> The introduction of the vent holes has a negligible effect on the strength of the BearPaw and is documented in the following memorandum # HTC-MEM-0709-001, Memorandum – Vent Holes BP350 BearPaw, Rev A, dated July 31, 2008					



## BearPaw Model BP350

Rework Instructions:	
1	Drill the hole pattern as per drawing #VNR106-S, BearPaw BP350 Pad Streamline, Rev R03, dated July 31, 2008

**Nathalie Barbeau**

---

**From:** Nathalie Barbeau [nbarbeau@helitowcart.com]  
**Sent:** December 17, 2008 1:51 PM  
**To:** 'Simon Bernier'  
**Subject:** RE: Helitowcart: Besoin de compléter les modifs de documents pour ECO no 3 (6 trous sur les pads de BP350)  
**Attachments:** image001.jpg

Allo Simon,  
Crois-tu pouvoir m'envoyer le document révisé cette semaine? Merci!

Ms Nathalie Barbeau  
General Manager

**Helitowcart** (Vanair inc.)  
877A Alphonse-Desrochers  
St-Nicolas, Levis,  
Quebec, Canada, G7A 5K6  
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[www.helitowcart.com](http://www.helitowcart.com)

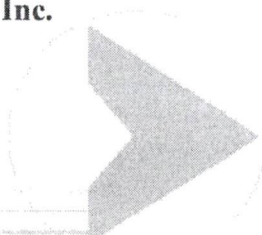
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**From:** Simon Bernier [mailto:simonb@ats-ast.com]  
**Sent:** December 8, 2008 8:21 AM  
**To:** Nathalie Barbeau  
**Subject:** RE: Helitowcart: Besoin de compléter les modifs de documents pour ECO no 3 (6 trous sur les pads de BP350)

Je ferai la modification aujourd'hui même et je soumettrai le tout a Miko.

Bonne journée / Have a nice day

Simon Bernier  
Structure Specialist / Spécialiste de Structure  
E-Mail : [simonb@ats-ast.com](mailto:simonb@ats-ast.com)  
**Aviatech Services Techniques Inc.**  
3005 rue Lindbergh  
Trois-Rivières, Qc, G9A 5E1  
Tel: (819)601-8049 (Ext :1106)  
Fax:(819)377-7928  
[www.ats-ast.com](http://www.ats-ast.com)



---

**De :** Nathalie Barbeau [mailto:nbarbeau@helitowcart.com]  
**Envoyé :** 6 décembre 2008 13:56  
**À :** Simon Bernier  
**Cc :** Mirko Zgela  
**Objet :** Helitowcart: Besoin de compléter les modifs de documents pour ECO no 3 (6 trous sur les pads de BP350)

17/12/2008

Bonjour Simon ( & Mirko),

Voilà 4 mois que j'attends un feedback de la part de notre client pour voir leur satisfaction en regard aux 6 trous percés pour éliminer la succion des pads. Après plusieurs demandes de ma part, ils ne semblent pas avoir de commentaires, ce qui est bon signe (ils nous l'auraient dit vite si les 6 trous n'avaient pas fait l'affaire).

J'ai donc décidé de fermer enfin mon dossier d'ordre de changement no 3.

Pour ce faire il reste encore un document à mettre à jour.

Il y a longtemps que j'ai remarqué le petit manque, mais je retardais à vous en faire part car je ne voulais rien faire en attendant de voir si le client changerait d'idée...

Vous m'avez fait parvenir le « Engineering Order' no HTX-EO-0709-002 Rev.A» et le dessin du pad avec trous correctement faits. Il nous manque toutefois la mise à jour de l'instruction d'assemblage.

C'est le document 314-0020-00-C qui devrait selon moi devenir version D.

J'ai identifié les éléments à réviser pour vous faciliter le travail :

Page 5 : Weight & Balance : Svp me confirmer que les 6 trous impliquent une modification de poids tellement fine qu'il n'est pas nécessaire de revoir ces données. (Je l'espère!)

Page 6 : Table 5 – Tolerances for Cracks & Wear. Svp nous confirmer les zones et tolérances pour le modèle de Pad Streamlined avec les 6 trous. De même, remplacer le dessin applicable en annexe B.

Annex A – Remplacer le dessin d'assemblage du pad streamline par le nouveau avec les 6 trous.

Si vous pouviez me réaliser ces micro modifs et faire réviser par Mirko d'ici quelques jours ce serait très apprécié. J'aimerais enfin lancer une nouvelle batch en assemblage dès cette semaine et je voudrais pouvoir avoir le document mis à jour.

Merci beaucoup!!

Nathalie

**Helitowcart** (Vanair inc.)

877A Alphonse-Desrochers

St-Nicolas, Levis,

Quebec, Canada, G7A 5K6

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[nbarbeau@helitowcart.com](mailto:nbarbeau@helitowcart.com)

[info@helitowcart.com](mailto:info@helitowcart.com)

[www.helitowcart.com](http://www.helitowcart.com)

**Nathalie Barbeau**

---

**From:** Nathalie Barbeau [nbarbeau@helitowcart.com]  
**Sent:** December 6, 2008 1:56 PM  
**To:** 'simonb@ats-ast.com'  
**Cc:** 'mirkoz@ats-ast.com'  
**Subject:** Helitowcart: Besoin de compléter les modifs de documents pour ECO no 3 (6 trous sur les pads de BP350)  
**Attachments:** 314-0020-00-C Instruct BearPaw Installation AS350-355.doc

Bonjour Simon ( & Mirko),

Voilà 4 mois que j'attends un feedback de la part de notre client pour voir leur satisfaction en regard aux 6 trous percés pour éliminer la succion des pads. Après plusieurs demandes de ma part, ils ne semblent pas avoir de commentaires, ce qui est bon signe (ils nous l'auraient dit vite si les 6 trous n'avaient pas fait l'affaire).

J'ai donc décidé de fermer enfin mon dossier d'ordre de changement no 3.

Pour ce faire il reste encore un document à mettre à jour.

Il y a longtemps que j'ai remarqué le petit manque, mais je retardais à vous en faire part car je ne voulais rien faire en attendant de voir si le client changerait d'idée...

Vous m'avez fait parvenir le « Engineering Order' no HTX-EO-0709-002 Rev.A» et le dessin du pad avec trous correctement faits. Il nous manque toutefois la mise à jour de l'instruction d'assemblage.

C'est le document 314-0020-00-C qui devrait selon moi devenir version D.

J'ai identifié les éléments à réviser pour vous faciliter le travail :

Page 5 : Weight & Balance : Svp me confirmer que les 6 trous impliquent une modification de poids tellement fine qu'il n'est pas nécessaire de revoir ces données. (Je l'espère!)

Page 6 : Table 5 – Tolerances for Cracks & Wear. Svp nous confirmer les zones et tolérances pour le modèle de Pad Streamlined avec les 6 trous. De même, remplacer le dessin applicable en annexe B.

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Merci beaucoup!!

Nathalie

**Helitowcart** (Vanair inc.)  
877A Alphonse-Desrochers  
St-Nicolas, Lévis,  
Quebec, Canada, G7A 5K6  
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plant tel: +1 418 836 4525  
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[info@helitowcart.com](mailto:info@helitowcart.com)  
[www.helitowcart.com](http://www.helitowcart.com)

06/12/2008

**Nathalie Barbeau**

---

**From:** Nathalie Barbeau [nbarbeau@helitowcart.com]  
**Sent:** December 6, 2008 1:56 PM  
**To:** 'simonb@ats-ast.com'  
**Cc:** 'mirkoz@ats-ast.com'  
**Subject:** Helitowcart: Besoin de compléter les modifs de documents pour ECO no 3 (6 trous sur les pads de BP350)  
**Attachments:** 314-0020-00-C Instruct BearPaw Installation AS350-355.doc

Bonjour Simon ( & Mirko),

Voilà 4 mois que j'attends un feedback de la part de notre client pour voir leur satisfaction en regard aux 6 trous percés pour éliminer la succion des pads. Après plusieurs demandes de ma part, ils ne semblent pas avoir de commentaires, ce qui est bon signe (ils nous l'auraient dit vite si les 6 trous n'avaient pas fait l'affaire).

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Il y a longtemps que j'ai remarqué le petit manque, mais je retardais à vous en faire part car je ne voulais rien faire en attendant de voir si le client changerait d'idée...

Vous m'avez fait parvenir le « Engineering Order' no HTX-EO-0709-002 Rev.A» et le dessin du pad avec trous correctement faits. Il nous manque toutefois la mise à jour de l'instruction d'assemblage.

C'est le document 314-0020-00-C qui devrait selon moi devenir version D.

J'ai identifié les éléments à réviser pour vous faciliter le travail :

Page 5 : Weight & Balance : Svp me confirmer que les 6 trous impliquent une modification de poids tellement fine qu'il n'est pas nécessaire de revoir ces données. (Je l'espère!)

Page 6 : Table 5 – Tolerances for Cracks & Wear. Svp nous confirmer les zones et tolérances pour le modèle de Pad Streamlined avec les 6 trous. De même, remplacer le dessin applicable en annexe B.

Annex A – Remplacer le dessin d'assemblage du pad streamline par le nouveau avec les 6 trous.

Si vous pouviez me réaliser ces micro modifs et faire réviser par Mirko d'ici quelques jours ce serait très apprécié. J'aimerais enfin lancer une nouvelle batch en assemblage dès cette semaine et je voudrais pouvoir avoir le document mis à jour.

Merci beaucoup!!

Nathalie

**Helitowcart** (Vanair inc.)  
877A Alphonse-Desrochers  
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Quebec, Canada, G7A 5K6  
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[info@helitowcart.com](mailto:info@helitowcart.com)  
[www.helitowcart.com](http://www.helitowcart.com)

**Nathalie Barbeau**

**From:** Nathalie Barbeau [nbarbeau@helitowcart.com]  
**Sent:** August 11, 2008 12:20 PM  
**To:** 'CBoule@canadianhelicopters.com'  
**Subject:** Helitowcart: Service Bulletin 080811 rev.a / 6x 1.5" Vent holes on BearPaw Pads

Dear Claude,

Find attached the Service bulletin with applicable reference documents to proceed with piercing vent holes to BP350 Streamline pads.

This bulletin recommends piercing 6 holes per pad (i.e. 3x 1.5" holes per side).

According to our records, you Canadian Helicopters owns 10 pairs of these Streamlined bearpaws. Find below our reference data for your convenience:

Our serial no:	Our invoice no:	Can Heli PO no:
✓ HTC-RC080522-01	2793/ Raymond Mantha	166880
✓ HTC-RC080522-02	2793/ Raymond Mantha	
✓ HTC-RC080522-03	2793/ Raymond Mantha	
✓ HTC-RC080522-04	2793/ Raymond Mantha	
✓ HTC-RC080522-05	2793/ Raymond Mantha	
✓ HTC-RC080312-01	2775/ Sylvain Miron	166621
✓ HTC-RC080312-02	2775/ Sylvain Miron	
✓ HTC-RC080312-03	2833/ Sylvain Miron	167609
✓ HTC-RC080311-01	2691/ Claude Boulé	164957
✓ HTC-RC080211-01	2679/ Claude Boulé	164957

We do hope this meets your needs.  
 Please do not hesitate to contact us for further details.

Kind Regards,

Ms Nathalie Barbeau  
 General Manager

**Helitowcart** (Vanair inc.)  
 860 Marie-Victorin, St-Nicolas, Levis,  
 Quebec, Canada, G7A 3S9  
 tel: +1 418 561 4512  
 fax: +1 418 531 0772  
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[info@helitowcart.com](mailto:info@helitowcart.com)  
[www.helitowcart.com](http://www.helitowcart.com)



## Service Bulletin

**Service Bulletin no:** 080811 rev. a

---

**Subject:** Vent hole additions to bearpaw pads

---

**Date:** 2008 08 11

**Reason:** Reduce possible suction when taking-off from muddy surfaces

**Reference documents:** BearPaw Model BP350- Engineering order- "HTC-EO-0709-002 Rev NC".  
BearPaw-BP350-PAD-STREAMLINE- "VNR106-S R03" (314-0018-01-S).

**Recommended actions:** Pierce 6 holes on each pad

**Guidance for actions:** Hole sizes to be drilled: 1.5" diameter  
Use drawing no VNR106-S R03.  
Page 1 indicates hole positions,  
Page 2 indicates hole size,  
Page 3 indicates hole pattern (see R03 reference and linked arrows)

---

**Issued by :** Nathalie Barbeau,  
General Manager,  
Helitowcart enterprises.

860 Marie-Victorin, St-Nicolas, Quebec, Canada, G7A 3S9  
Tel: 418-561-4512, Fax: 418-836-2291  
email: info@helitowcart.com

*N. Barbeau* 080811

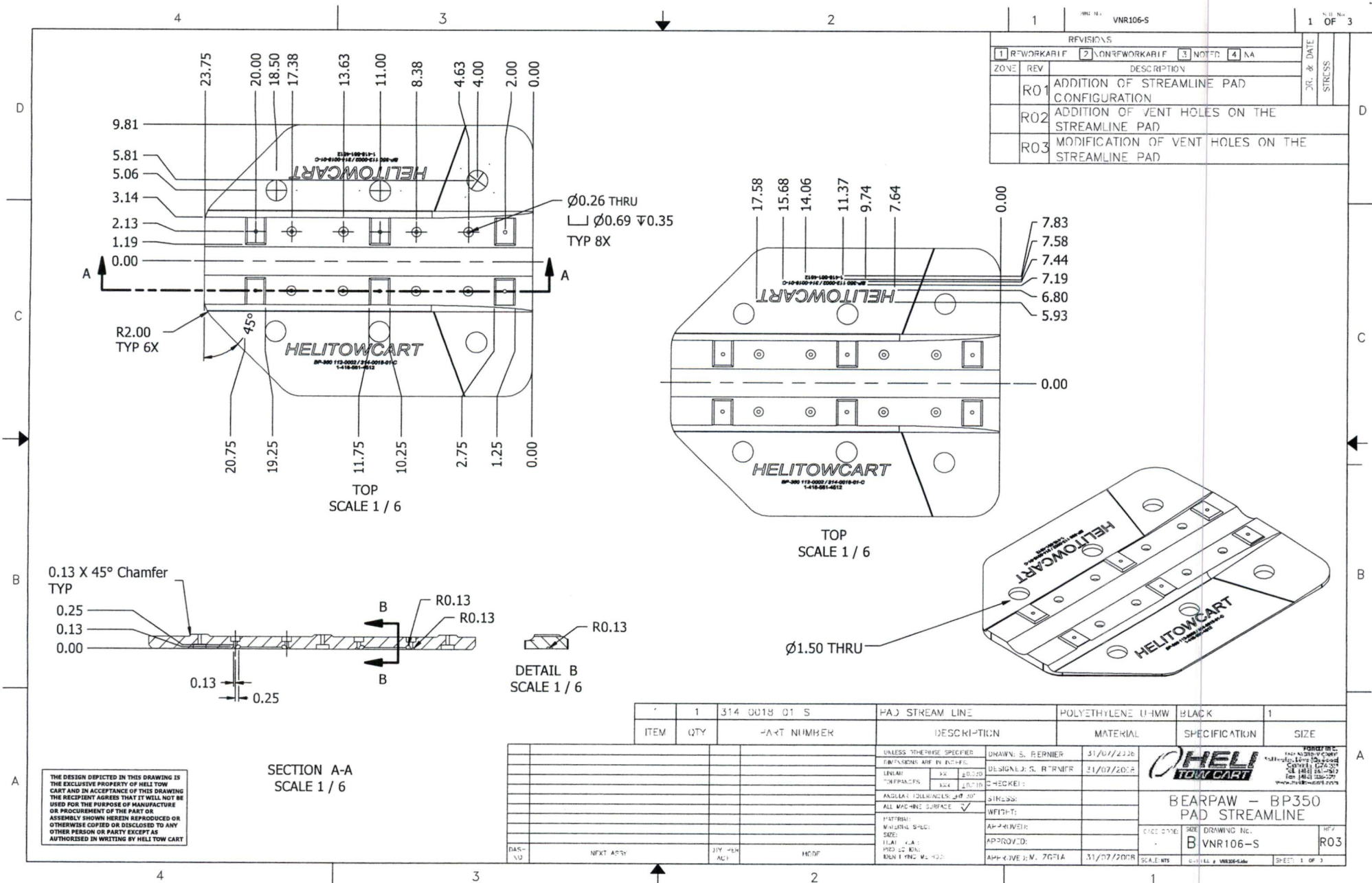
## Engineering Order

<b>Title:</b> Bear Paw Model BP350 Vent Holes				<b>EO#:</b> HTS-EO-0709-002 Rev A	
<b>Prepared by:</b> Simon Bernier	<b>Design:</b> N/A	<b>Mech:</b> N/A	<b>Stress:</b> N/A	<b>Approved:</b> Mirko Zgela (DAR #310)	<b>Date:</b> July 31, 2008
<b>A/C Effectivity:</b>	AS 350 D, B, B1, B2, B3 & BA AS 355				
<b>Reference Documents:</b>					
[a]	Drawings: #112-0002-00, BearPaw BP350 – Assembly, Rev C, dated July 31, 2008				
[b]	#VNR106-S, BearPaw BP350 Pad Streamline, Rev R03, dated July 31, 2008				
[c]	# HTC-MEM-0709-001, Memorandum – Vent Holes BP350 BearPaw, Rev A, dated July 31, 2008				
<b>Reason for change:</b>  To reduce the possibility for the BearPaw to stick to the ground while performing landing & take off on muddy terrain.					
<b>Description of change:</b>  To create a continuous path for the air, a number of holes are drilled into the Bear Paw pads.					
<b>Previous Configuration:</b>  The old configuration was as per drawing #VNR106-S, BearPaw BP350 Pad Streamline, Rev A, dated Feb 29, 2008					
<b>New Configuration:</b>  The new configuration of Bear Paw is as per drawing #VNR106-S, BearPaw BP350 Pad Streamline, Rev <b>R03</b> , dated July 31, 2008.					
<b>Structural substantiation:</b> The introduction of the vent holes has a negligible effect on the strength of the BearPaw and is documented in the following memorandum # HTC-MEM-0709-001, Memorandum – Vent Holes BP350 BearPaw, Rev A, dated July 31, 2008					

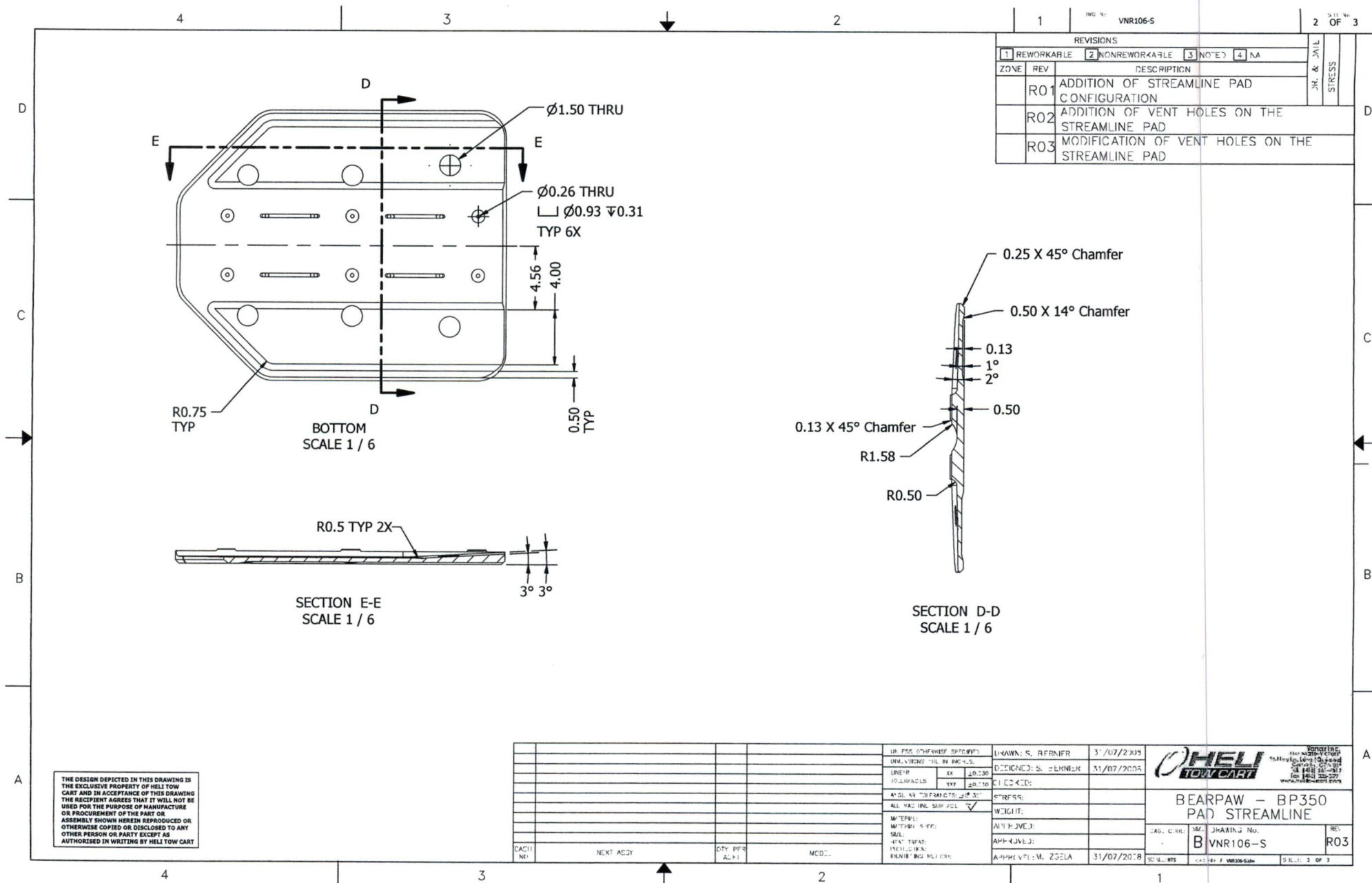


## BearPaw Model BP350

Rework Instructions:	
1	Drill the hole pattern as per drawing #VNR106-S, BearPaw BP350 Pad Streamline, Rev R03, dated July 31, 2008



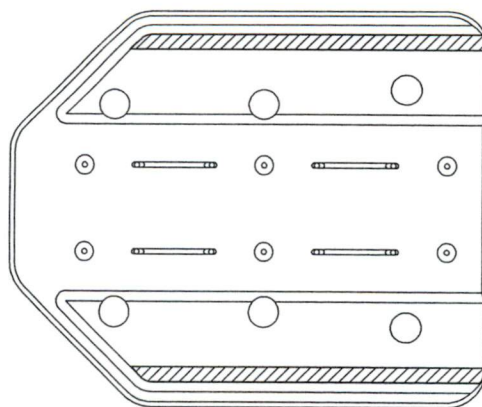
*Handwritten signature: D. Bente 080801*



1. ZONE D = ALL NON-SHADED AREA

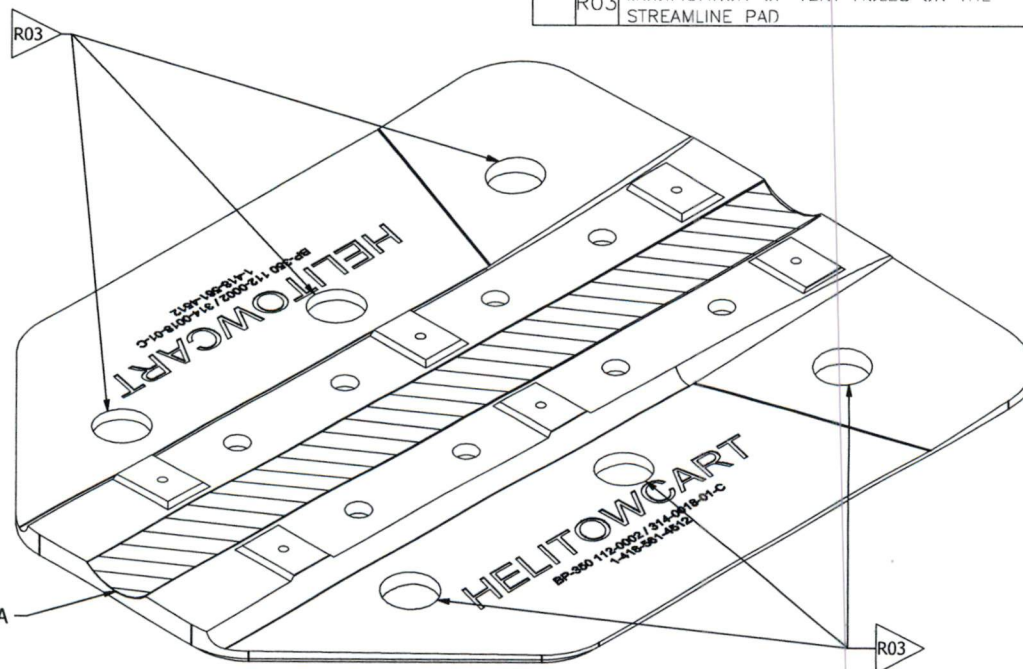


TOP



BOTTOM

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ZONE A

- ZONE C

ISO

1		REV: VNR106-S		3 OF 3	
REVISIONS					
1	REWORKABLE	2	NONREWORKABLE	3	NOTE
				4	NA
ZONE	REV	DESCRIPTION			JK. & JAL STRESS
	R01	ADDITION OF STREAMLINE PAD CONFIGURATION			
	R02	ADDITION OF VENT HOLES ON THE STREAMLINE PAD			
	R03	MODIFICATION OF VENT HOLES ON THE STREAMLINE PAD			

[illegible]

**Nathalie Barbeau**

---

**From:** Nathalie Barbeau [nbarbeau@helitowcart.com]  
**Sent:** August 11, 2008 1:30 PM  
**To:** 'CBoule@canadianhelicopters.com'  
**Subject:** Helitowcart: Svp rebuter premier Service Bulletin

Bonjour M. Boulé.

Afin d'éviter toute confusion, svp rebuter le Service Bulletin no : 080730 rev.a (le bulletin avec dessin des petits trous)

Et le remplacer par le Service Bulletin no : 080811 rev.a (bulletin avec dessin des 3 trous par côté de 1.5") (tel que transmis à votre attention il y a quelques minutes).

Merci,

Ms Nathalie Barbeau  
General Manager

**Helitowcart** (Vanair inc.)  
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[info@helitowcart.com](mailto:info@helitowcart.com)  
[www.helitowcart.com](http://www.helitowcart.com)



# BearPaw Model BP350

## Engineering Order

<b>Title:</b> Bear Paw Model BP350 Vent Holes				<b>EO#:</b> HTS-EO-0709-002 Rev A	
<b>Prepared by:</b> Simon Bernier	<b>Design:</b> N/A	<b>Mech:</b> N/A	<b>Stress:</b> N/A	<b>Approved:</b> Mirko Zgela (DAR #310)	<b>Date:</b> July 31, 2008
<b>A/C Effectivity:</b>	AS 350 D, B, B1, B2, B3 & BA AS 355				
<b>Reference Documents:</b>					
[a]	Drawings: #112-0002-00, BearPaw BP350 – Assembly, Rev C, dated July 31, 2008				
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<b>Reason for change:</b>  To reduce the possibility for the BearPaw to stick to the ground while performing landing & take off on muddy terrain.					
<b>Description of change:</b>  To create a continuous path for the air, a number of holes are drilled into the Bear Paw pads.					
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<b>Structural substantiation:</b> The introduction of the vent holes has a negligible effect on the strength of the BearPaw and is documented in the following memorandum # HTC-MEM-0709-001, Memorandum – Vent Holes BP350 BearPaw, Rev A, dated July 31, 2008					

Copies pour ref.  
original ds  
DMR



## BearPaw Model BP350

Rework Instructions:	
1	Drill the hole pattern as per drawing #VNR106-S, BearPaw BP350 Pad Streamline, Rev R03, dated July 31, 2008

MEMORANDUM – VENT HOLE BP350 BEARPAW

Ref: HTC-EO-0709-002 Rev A, dated July 31, 2008

As per document HTC-EO-0709-002 Rev A, dated July 31 2008, a finite element model has been studied to ensure the structural substantiation of the new bearpaw. A comparison of the new model and the old is made.

**Equivalent Stress**

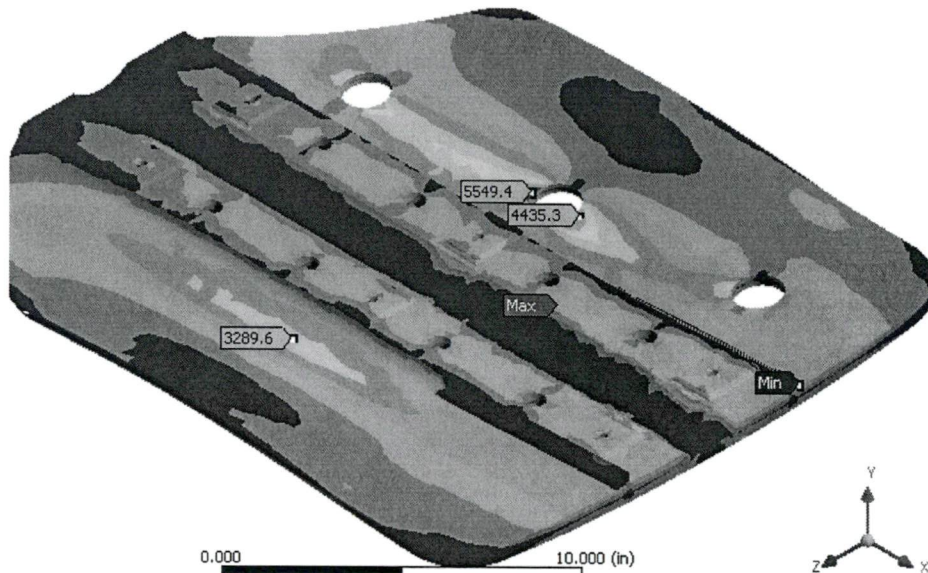
Type: Equivalent (von-Mises) Stress

Unit: psi

Time: 1

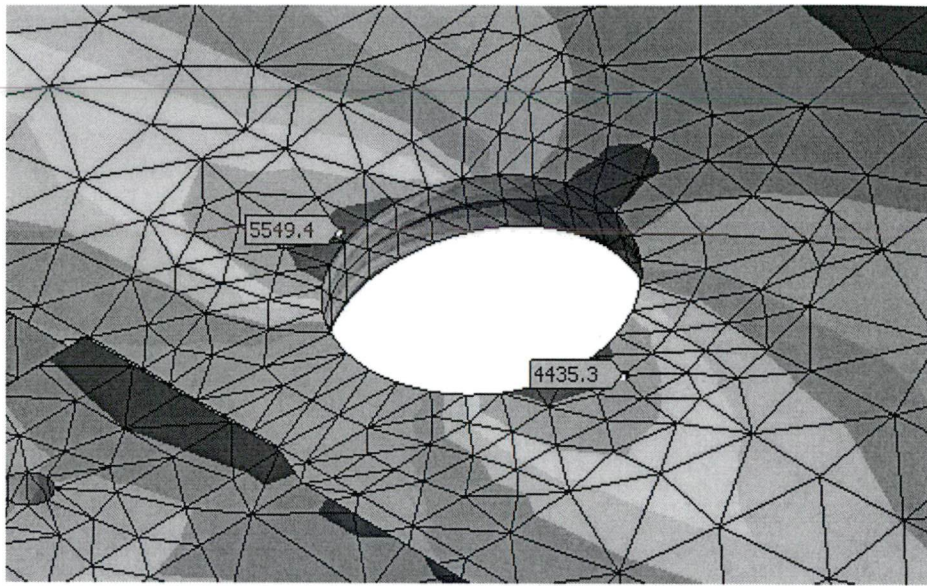
01/08/2008 09:47

6338,8 Max  
5000  
4000  
3429,6  
2859,3  
2288,9  
1718,5  
1148,1  
577,77  
7,3953 Min



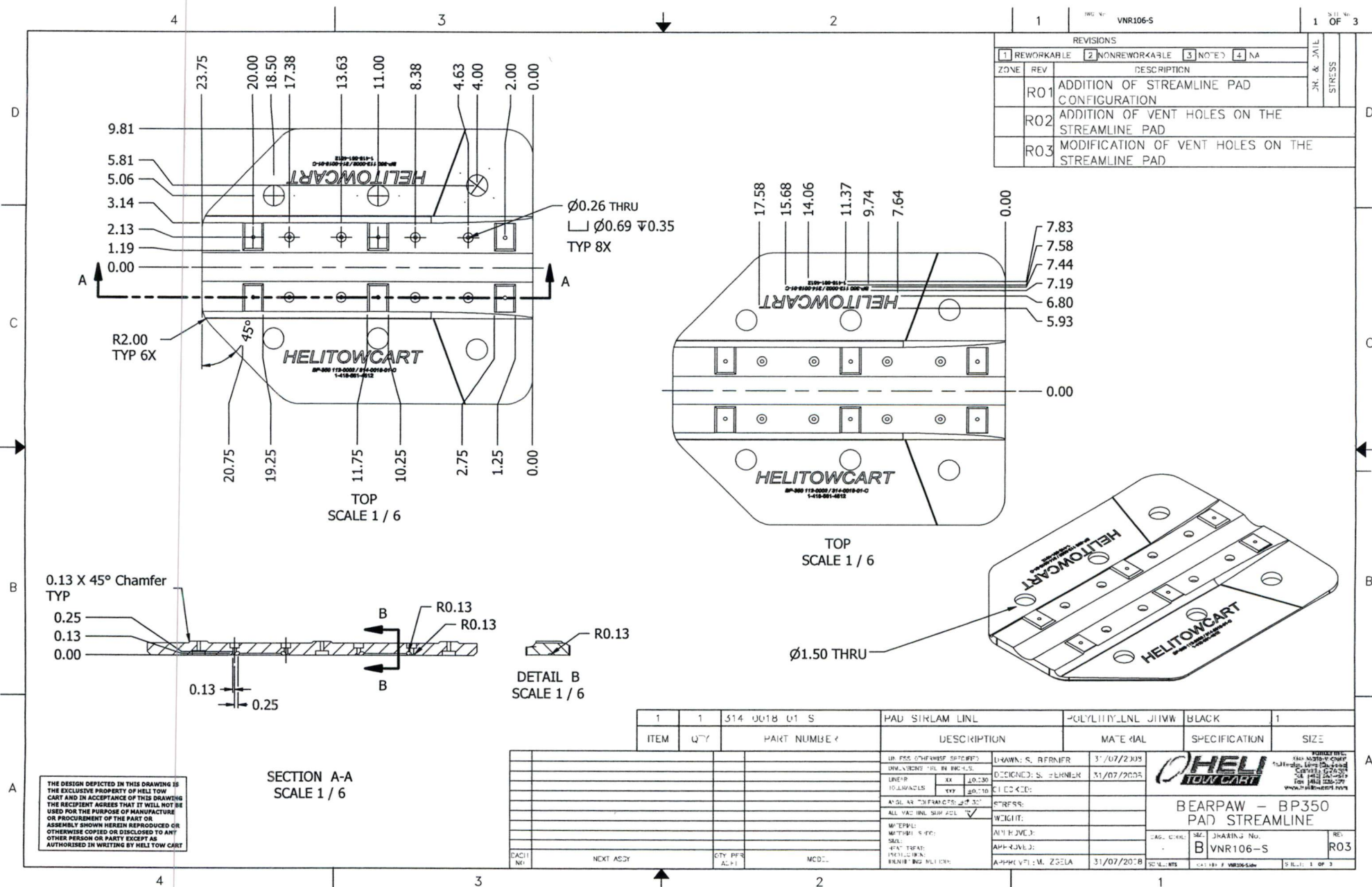
**Figure 1 - Von Mises Mapping Stress**

The model shows that the stress go by 3289 psi to 5549 psi. But 5549 psi is not the reality, if we take a closer look at the hole stress, see Figure 2, the stress is indeed lower 4435 psi.



**Figure 2 - Von Mises Hole Mapping Stress**

The material is very ductile, so the peak stress in the hole edge can be ignored. The material ultimate tensile strength is 6800 psi which give us a margin of safety of 1.53 is acceptable.



4

3

2

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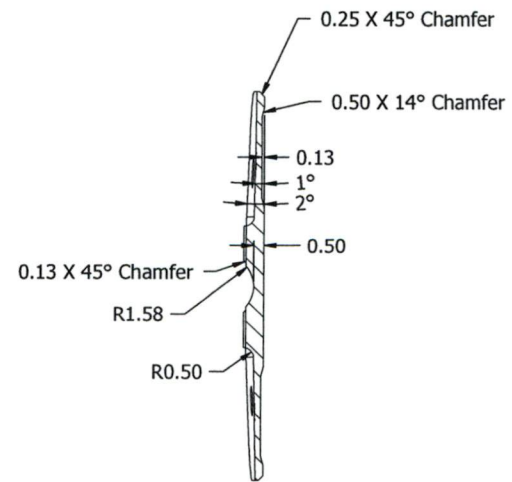
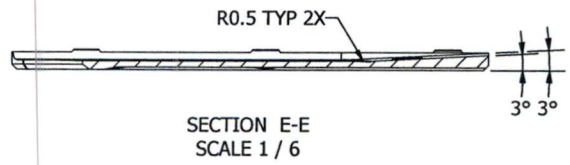
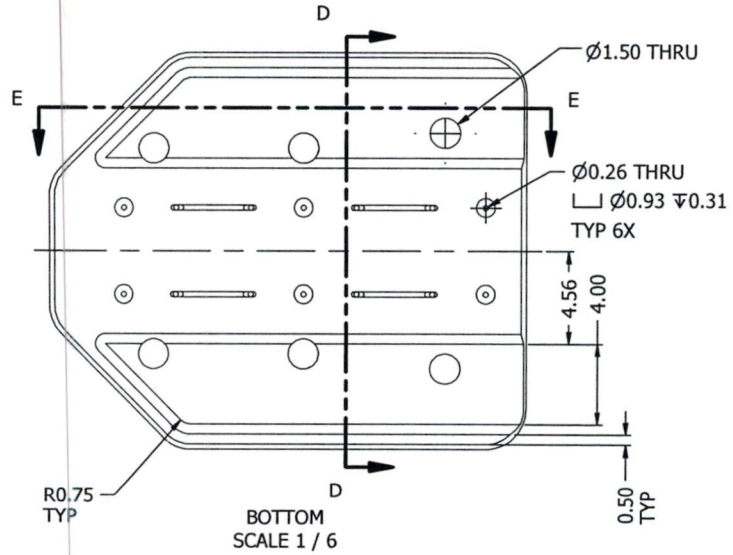
VNR106-S

2


OF 3

## REVISIONS

1	2	3	4
REWORKABLE	NONREWORKABLE	NOTED	NA
ZONE	REV	DESCRIPTION	
	R01	ADDITION OF STREAMLINE PAD CONFIGURATION	
	R02	ADDITION OF VENT HOLES ON THE STREAMLINE PAD	
	R03	MODIFICATION OF VENT HOLES ON THE STREAMLINE PAD	

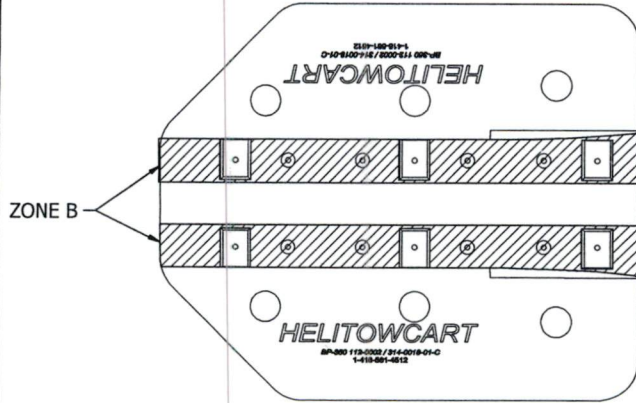
SR. & JAIL  
STRESS

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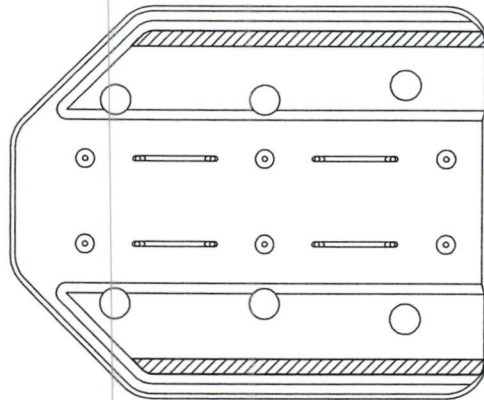
				UP FOR CHANGES (STAMP)	DRAWN: S. REHNER	31/07/2008	 <div>For more information visit our website www.helitowcart.com Tel: 01481 511-517 Fax: 01481 511-517 Email: sales@helitowcart.com</div>		
				DESIGNED: S. REHNER	31/07/2008				
				DATE: 31/07/2008	31/07/2008				
				ALL VENT HOLES SHALL BE 3°	31/07/2008				
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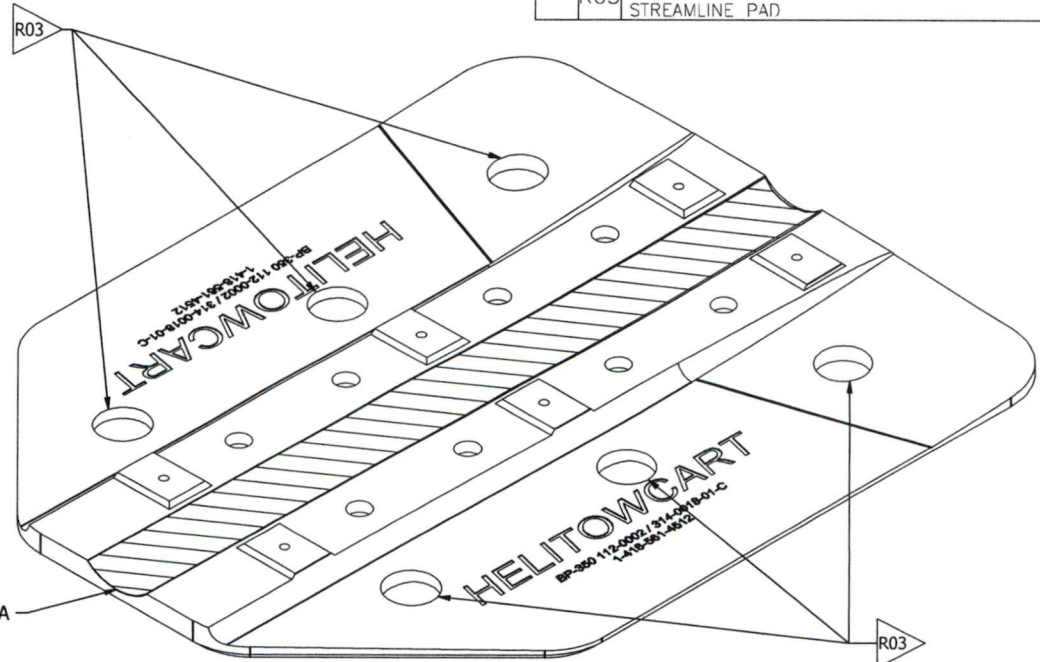
1. ZONE D = ALL NON-SHADED AREA



TOP




BOTTOM

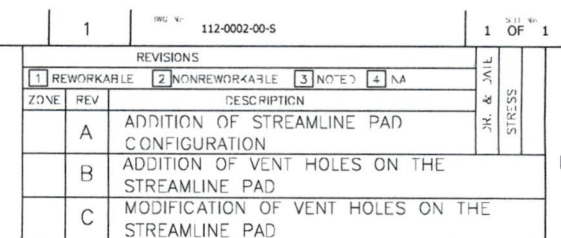


ISO

REVISIONS			
1	2	3	4
REWORKABLE	NONREWORKABLE	NOTED	NA
ZONE	REV	DESCRIPTION	
	R01	ADDITION OF STREAMLINE PAD CONFIGURATION	
	R02	ADDITION OF VENT HOLES ON THE STREAMLINE PAD	
	R03	MODIFICATION OF VENT HOLES ON THE STREAMLINE PAD	

THE DESIGN DEPICTED IN THIS DRAWING IS THE EXCLUSIVE PROPERTY OF HELITOW CART AND IN ACCEPTANCE OF THIS DRAWING THE RECIPIENT AGREES THAT IT WILL NOT BE USED FOR THE PURPOSE OF MANUFACTURE OR PROCUREMENT OF THE PART OR ASSEMBLY SHOWN HEREIN REPRODUCED OR OTHERWISE COPIED OR DISCLOSED TO ANY OTHER PERSON OR PARTY EXCEPT AS AUTHORIZED IN WRITING BY HELITOW CART

				UNLESS OTHERWISE SPECIFIED:		DRAWN: S. REFRER		3/07/2005		 <div>FORGE B.C. 1400 W. 10th Ave. Edmonton, Alberta T6M 1S5 Canada Tel: 781.347.2618 Fax: 781.347.2619 Email: info@helitow.com Website: www.helitow.com</div>	
				DIMENSIONS: 1/16 IN. DECIMALS		CHECKED: S. BENNEN		31/07/2005			
				LINE: 1/16		CLOCKED:				<div>BEARPAW – BP350 PAD STREAMLINE</div>	
				TOLERANCES: 1/16		STRESS:					
				ANGLE: 30° FROM 90° ± 30°		WEIGHT:				<div>SEC. DRAWING No. <b>B VNR106-S</b></div>	
				ALL VACUUM SURFACES <input checked="" type="checkbox"/>		FINISH:					
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NOTE: ICEBLADE ASSEMBLY, ITEM4,  
CAN BE OMITED FROM INSTALLATION  
(OPTIONAL)

1	3	314 0019 15	U SHAPED CLIP	STFFI		
2	6	314 0012 01 A	FILLER BLOCK	STILL		1/4
3	6	314 0007 15 H	SLOTTED CLIP SUPPORT	STEEL		
4	4	314 0005 15 A	ICE BLADE ASSEMBLY	STEEL		1x6 1/4
5	14	262 0001 1/ A	MD20365 42B	STILL		1/4 28
6	6	261 0001 17 A	AN4 14A	STEEL		1/4 28 UNF
7	20	263 0001 17 A	AN960 416	STEEL		1/4
8	1	314 0018 01 S	PAD STREAM LINE	POLYETHYLENE JIIVW	BLACK	1
9	1	314 0021 01 A	SHRINK			

[illegible]

THE DESIGN DEPICTED IN THIS DRAWING IS THE EXCLUSIVE PROPERTY OF HELI TOW CART AND IN ACCEPTANCE OF THIS DRAWING THE RECIPIENT AGREES THAT IT WILL NOT BE USED FOR THE PURPOSE OF MANUFACTURE OR PROCUREMENT OF THE PART OR ASSEMBLY SHOWN HEREIN REPRODUCED OR OTHERWISE COPIED OR DISCLOSED TO ANY OTHER PERSON OR PARTY EXCEPT AS AUTHORISED IN WRITING BY HELI TOW CART

**HELI**  
**TOW CART**

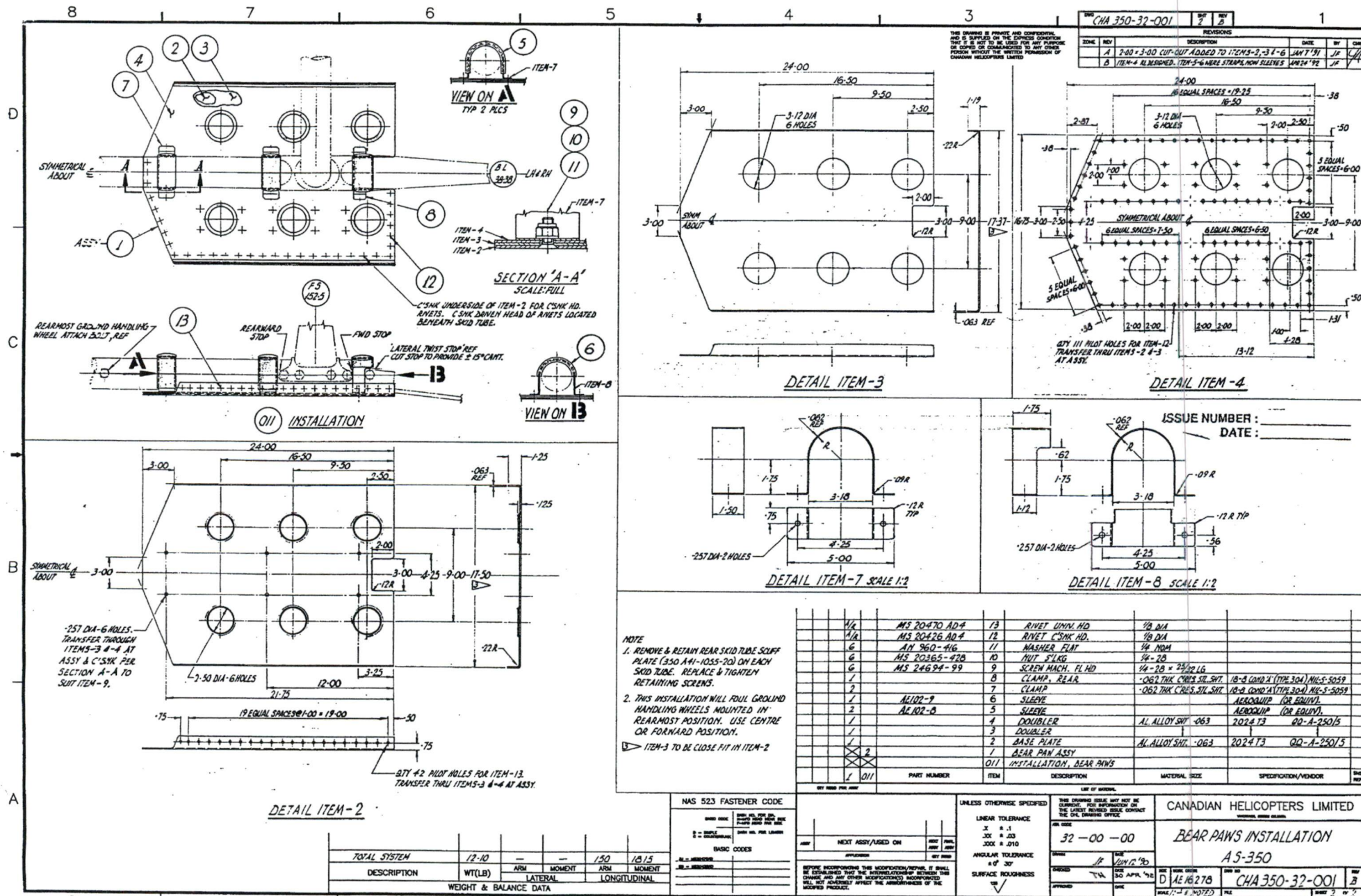
BEARPAW – BP350  
ASSEMBLY STREAMLINE

FILE	SIZ	DRADING No.	PT
	B	112-0002-00-S	C

8	SECRET	CLASSIFIED BY 112-0000-00-014-	SECRET 1 OF 1
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N. Barhan 080801

# SUGGESTION FROM C. BOUCÉ



# Eurocopter Model AS 350/355 Series Helicopters Installation of BearPaw Model BP350

**Report: HTC-MDL-BP-AS350/355-1000 (Rev E)**

  
Mirko Zgela

DATE: AUG 01, 2008

Design Approval Representative DAR #310

Revision	Revision Date	Revision of Entry	Entered by
A	Nov 22, 2006	Initial issue	N/A
B	Jan 28, 2007	Revision performed to the Installation Instructions (Doc # HTC-314-0020-00-B).	M.Z.
C	Feb 28, 2007	Addition of streamline pad configuration.	M.Z.
D	July 27, 2008	Addition of vents holes in the streamline pad.	M.Z.
E	Aug 01, 2008	Modification of vents holes in the streamline pad.	M.Z.

P. Barton 08.08.01

## 1.0 MASTER DOCUMENTS

Document #	Title	Revision Status	Approval by	Date
AAC-CPL-BP-AS350/355-1000	Compliance Plan – Eurocopter Model AS350/355 Series Helicopters – Installation of BearPaw Model BP350	NC	DAR 310	Nov 22, 2006
HTC-314-0020-00-C	BearPaw Model BP350 – Installation Instructions – AS350/355 Series Helicopters	C	DAR 310	Feb 28, 2008
AAC-STR-BP-AS350/355-1000	Structural Substantiation – Helitowcart Inc. BearPaw Model BP350	NC	DAR 310	Nov 20, 2006
AAC-FTR-C-GZNC	Simple External Modification – Applicant's Flight Test Plan/Report	NC	DAR 310	Nov 21, 2006
HTS-EO-0709-002	Bear Paw Model BP350 Vent Holes	A	DAR 310	July 31, 2008
HTC-MEM-0709-001	Memorandum – Vent Hole BP350 BearPaw	A	DAR 310	July 31, 2008

## 2.0 MASTER DRAWINGS

Drawings #	Title	Revision Status	Approval by	Date
112-0002-00	BearPaw BP350 - Assembly	B	DAR 310	Nov 20, 2006
112-0002-00-S	BearPaw BP350 – Assembly Streamline	C	DAR 310	July 31, 2008
VNR084	BearPaw – Iceblade	R01	DAR 310	Apr 24, 2006
VNR085	BearPaw – Iceblade Threaded Rod	R01	DAR 310	Apr 24, 2006
VNR086	BearPaw – Iceblade Assembly	R01	DAR 310	Apr 24, 2006
VNR106	BearPaw BP350 - Pad	R02	DAR 310	Sept 26, 2006
VNR106-S	BearPaw BP350 – Pad Streamline	R03	DAR 310	July 31, 2008
VNR107	BearPaw BP350 – U Shaped Clip	R01	DAR 310	Sept 29, 2006
VNR089	Bearpaw – Slotted Clip Support	R04	DAR 310	July 31, 2006
VNR099	Filler Block ¼"	R01	DAR 310	Aug 8, 2006



### 3.0 REFERENCE DOCUMENTS

Document #	Title	Revision Status	Approval by	Date
314-0009-01-A	Ultra High Molecular Weight Polyethylene – Typical Properties	A	N/A	May 24, 2006
314-0008-01-A	Propriétés du UHMW TIVAR	A	N/A	May 24, 2006
314-0017-05-A	Heat Shrink Specifications	A	N/A	Sept 6, 2006

## Nathalie Barbeau

**From:** CBoule@canadianhelicopters.com  
**Sent:** August 19, 2008 11:41 AM  
**To:** Nathalie Barbeau  
**Subject:** Re: Helitowcart: Suggestoin bearpaw 5 trous  
**Attachments:** unnamed.txt; unnamed.htm; image001.gif; image002.gif; image003.jpg; image007.jpg; image008.jpg

Bonjour

Comme je vous le disait Hier soir, nous avons fait les trous (6) d'après le doument SB080811 rev A.

J'attend si il y des commntaires du chantier avant de faire tout autre changement.

Merci

Claude Boulé

Chief Engineer, VFR, Qc/ On/ Nb.  
Tel: 450-452-3025  
Fax: 450-452-2483  
cboule@canadianhelicopters.com

"Nathalie Barbeau" <nbarbeauhelitowcart@gmail.com>

To <CBoule@canadianhelicopters.com>

cc

18/08/2008 07:40 PM

Subject Helitowcart: Suggestoin bearpaw 5 trous

M. Boulé,  
Voici une version améliorée fournie par Mirko aujourd'hui.  
Nous pourrions ajouter deux autres trous de ventilation de chaque côté.  
J'aimerais en discuter avec vous avant de fixer ce modèle.  
À demain!  
Nathalie

-----Original Message-----

From: Helitowcart (Vanair inc) [mailto:info@helitowcart.com]  
Sent: August 18, 2008 7:36 PM  
To: nbarbeau@helitowcart.com  
Subject: Trans.: TR: bearpaw 5 trou

Nathalie Barbeau,  
Sales & Service

Helitowcart (Vanair inc.)

06/12/2008

860 Marie-Victorin,  
St-Nicolas, Levis,  
Quebec, Canada G7A 3S9

tel: 1.418.561.4512

fax: 1.418.836.2291

email: info@helitowcart.com

website: www.helitowcart.com

----- Message transféré de Simon Bernier <Simonb@ats-ast.com> -----

Date : Mon, 18 Aug 2008 15:33:39 -0400

De : Simon Bernier <Simonb@ats-ast.com>

Adresse de retour : Simon Bernier <Simonb@ats-ast.com>

Sujet : TR: bearpaw 5 trou

À : "Helitowcart \\(Vanair inc\\)" <info@helitowcart.com>

Trou 1po

Trou 1.5po

Bonne journée / Have a nice day\_\_\_\_\_

Simon Bernier

E-Mail : simonb@ats-ast.com

Aviatech Services Techniques Inc.

3005 rue Lindbergh

Trois-Rivières, Qc, G9A 5E1

Tel: (819)601-8049 (Ext :1106)

Fax: (819)377-7928

----- Fin du message transféré -----

06/12/2008

## Nathalie Barbeau

---

**From:** Helitowcart (Vanair inc) [info@helitowcart.com]  
**Sent:** August 18, 2008 7:39 PM  
**To:** nbarbeau@helitowcart.com  
**Subject:** Trans.: TR: bearpaw 5 trou

**Follow Up Flag:** Follow up  
**Flag Status:** Red

**Attachments:** unnamed.txt; unnamed.htm; image001.gif; image002.gif; image003.jpg; image007.jpg; image008.jpg



unnamed.txt (405 B)



unnamed.htm (10 KB)



image001.gif (233 B)



image002.gif (293 B)



image003.jpg (26 KB)



image007.jpg (42 KB)



image008.jpg (2 KB)

Nathalie Barbeau,  
Sales & Service

Helitowcart (Vanair inc.)  
860 Marie-Victorin,  
St-Nicolas, Levis,  
Quebec, Canada G7A 3S9

tel: 1.418.561.4512  
fax: 1.418.836.2291  
email: info@helitowcart.com  
website: www.helitowcart.com

----- Message transféré de Simon Bernier <Simonb@ats-ast.com> -----  
Date : Mon, 18 Aug 2008 15:33:39 -0400  
De : Simon Bernier <Simonb@ats-ast.com> Adresse de retour : Simon Bernier  
<Simonb@ats-ast.com>  
Sujet : TR: bearpaw 5 trou  
À : "Helitowcart \\(Vanair inc\\)" <info@helitowcart.com>

Trou 1po

Trou 1.5po

Bonne journée / Have a nice day \_\_\_\_\_

Simon Bernier

E-Mail : simonb@ats-ast.com

Aviatech Services Techniques Inc.

3005 rue Lindbergh

Trois-Rivières, Qc, G9A 5E1

Tel: (819) 601-8049 (Ext :1106)

Fax: (819) 377-7928

----- Fin du message transféré -----

## Nathalie Barbeau

---

**From:** CBoule@canadianhelicopters.com  
**Sent:** August 18, 2008 7:45 PM  
**To:** Nathalie Barbeau  
**Subject:** Re: Helitowcart: Suggestoin bearpaw 5 trous

Allo

Nous avons modifies tout les bearpaws avec le 6 trous de 1.5" pour l'instant.  
Je regarderai les nouveaux dessins demain.

Merci

----- Message d'origine -----

De : "Nathalie Barbeau" [nbarbeauhelitowcart@gmail.com] Envoyé : 08/18/2008 07:40 PM AST  
À : Claude Boule Objet : Helitowcart: Suggestoin bearpaw 5 trous

M. Boulé,

Voici une version améliorée fournie par Mirko aujourd'hui.  
Nous pourrions ajouter deux autres trous de ventilation de chaque côté.  
J'aimerais en discuter avec vous avant de fixer ce modèle.

À demain!

Nathalie

-----Original Message-----

From: Helitowcart (Vanair inc) [mailto:info@helitowcart.com]  
Sent: August 18, 2008 7:36 PM  
To: nbarbeau@helitowcart.com  
Subject: Trans.: TR: bearpaw 5 trou

Nathalie Barbeau,  
Sales & Service

Helitowcart (Vanair inc.)  
860 Marie-Victorin,  
St-Nicolas, Levis,  
Quebec, Canada G7A 3S9

tel: 1.418.561.4512  
fax: 1.418.836.2291  
email: info@helitowcart.com  
website: www.helitowcart.com

----- Message transféré de Simon Bernier <Simonb@ats-ast.com> -----

Date : Mon, 18 Aug 2008 15:33:39 -0400

De : Simon Bernier <Simonb@ats-ast.com>

Adresse de retour : Simon Bernier <Simonb@ats-ast.com>

Sujet : TR: bearpaw 5 trou

À : "Helitowcart \\\(Vanair inc\\)" <info@helitowcart.com>

Trou 1po

Trou 1.5po

Bonne journée / Have a nice day\_\_\_\_\_

Simon Bernier

E-Mail : [simonb@ats-ast.com](mailto:simonb@ats-ast.com)

Aviatech Services Techniques Inc.

3005 rue Lindbergh

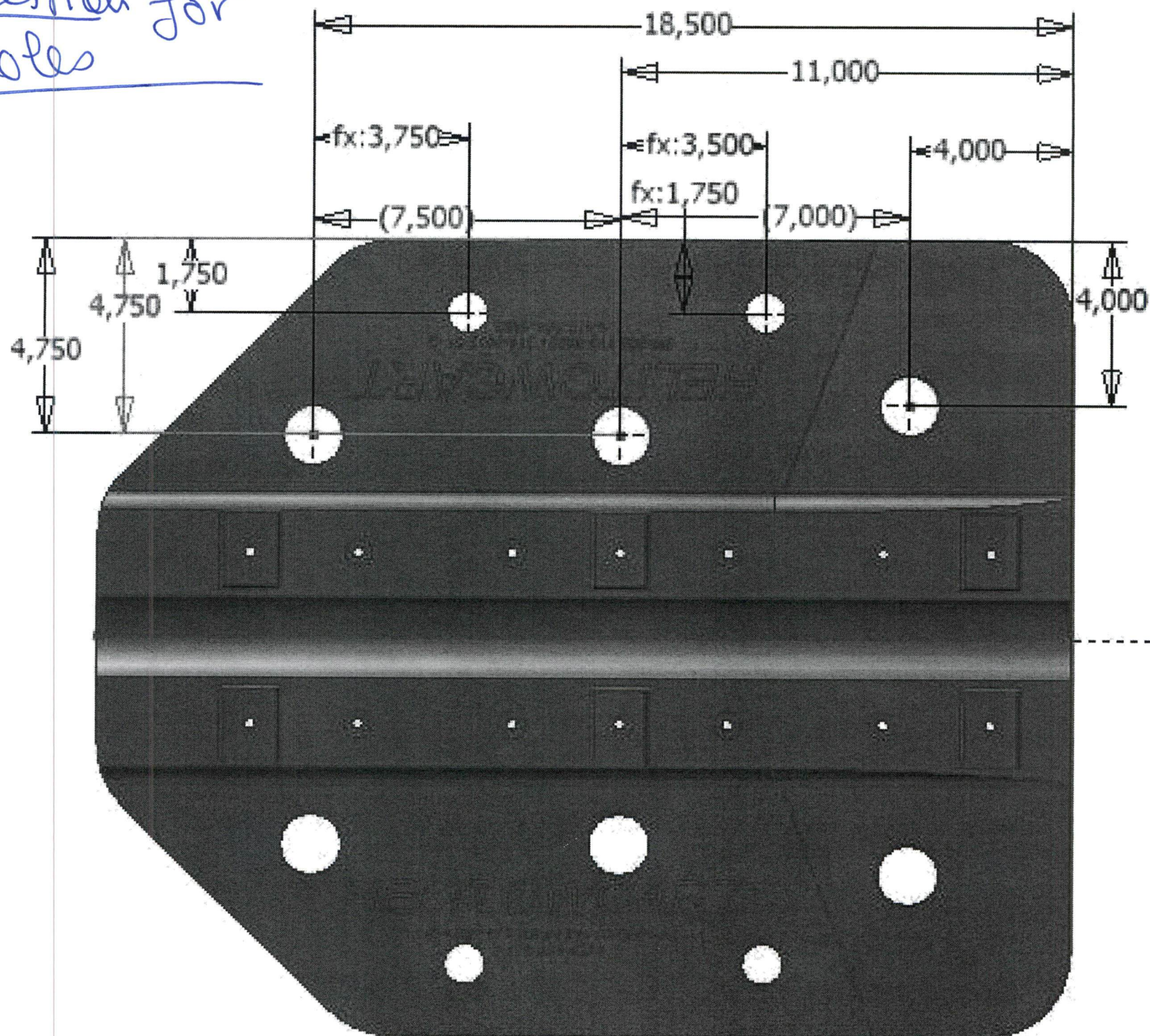
Trois-Rivières, Qc, G9A 5E1

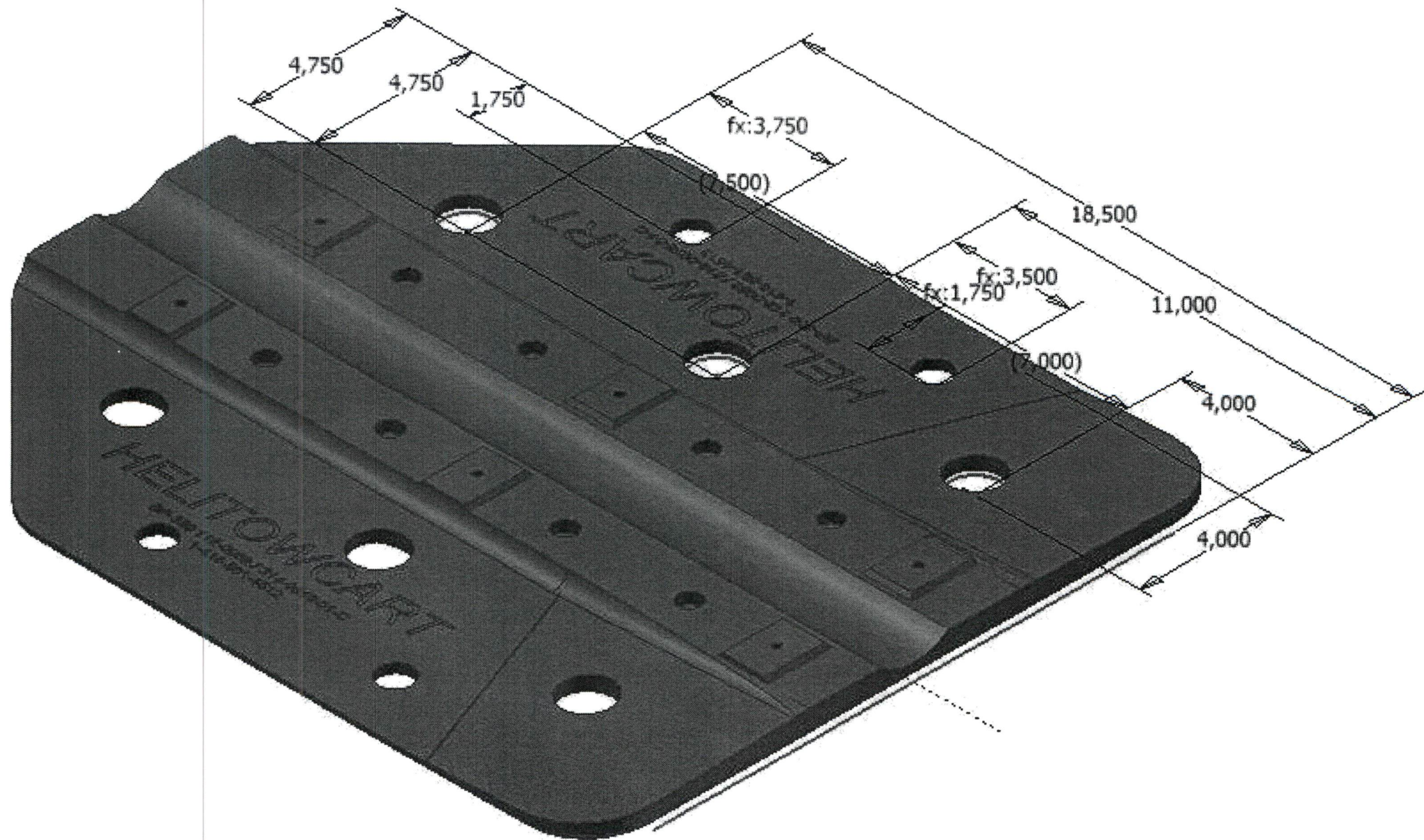
Tel: (819) 601-8049 (Ext :1106)

Fax: (819) 377-7928

----- Fin du message transféré -----

Suggestion for  
5 holes





## Nathalie Barbeau

---

**From:** Helitowcart (Vanair inc) [info@helitowcart.com]  
**Sent:** August 18, 2008 7:39 PM  
**To:** nbarbeau@helitowcart.com  
**Subject:** Trans.: TR: bearpaw 5 trou

**Follow Up Flag:** Follow up  
**Flag Status:** Red



unnamed.txt (405 B)



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image001.gif (233 B)



image002.gif (293 B)



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----- Message transféré de Simon Bernier <Simonb@ats-ast.com> -----  
Date : Mon, 18 Aug 2008 15:33:39 -0400  
De : Simon Bernier <Simonb@ats-ast.com> Adresse de retour : Simon Bernier  
<Simonb@ats-ast.com>  
Sujet : TR: bearpaw 5 trou  
À : "Helitowcart \\(Vanair inc\\)" <info@helitowcart.com>

Trou 1po

Trou 1.5po

Bonne journée / Have a nice day\_\_\_\_\_

Simon Bernier

E-Mail : simonb@ats-ast.com

Aviatech Services Techniques Inc.

3005 rue Lindbergh

Trois-Rivières, Qc, G9A 5E1

Tel: (819) 601-8049 (Ext :1106)

Fax: (819) 377-7928

----- Fin du message transféré -----

## Nathalie Barbeau

---

**From:** CBoule@canadianhelicopters.com  
**Sent:** August 19, 2008 11:41 AM  
**To:** Nathalie Barbeau  
**Subject:** Re: Helitowcart: Suggestoin bearpaw 5 trous

Bonjour

Comme je vous le disait Hier soir, nous avons fait les trous (6) d'après le doument SB080811 rev A.

J'attends si il y des commntaires du chantier avant de faire tout autre changement.

Merci

Claude Boulé  
Chief Engineer, VFR, Qc/ On/ Nb.  
Tel: 450-452-3025  
Fax: 450-452-2483  
cboule@canadianhelicopters.com

"Nathalie Barbeau" <nbarbeauhelitowcart@gmail.com>

To <CBoule@canadianhelicopters.com>

cc

18/08/2008 07:40 PM

Subject Helitowcart: Suggestoin bearpaw 5 trous

M. Boulé,  
Voici une version améliorée fournie par Mirko aujourd'hui.  
Nous pourrions ajouter deux autres trous de ventilation de chaque côté.  
J'aimerais en discuter avec vous avant de fixer ce modèle.  
À demain!  
Nathalie

-----Original Message-----

From: Helitowcart (Vanair inc) [mailto:info@helitowcart.com]  
Sent: August 18, 2008 7:36 PM  
To: nbarbeau@helitowcart.com  
Subject: Trans.: TR: bearpaw 5 trou

---

Nathalie Barbeau,  
Sales & Service

Helitowcart (Vanair inc.)  
860 Marie-Victorin,  
St-Nicolas, Levis,

26/08/2008

Quebec, Canada G7A 3S9

tel: 1.418.561.4512

fax: 1.418.836.2291

email: info@helitowcart.com

website: www.helitowcart.com

----- Message transféré de Simon Bernier <Simonb@ats-ast.com> -----

Date : Mon, 18 Aug 2008 15:33:39 -0400

De : Simon Bernier <Simonb@ats-ast.com>

Adresse de retour : Simon Bernier <Simonb@ats-ast.com>

Sujet : TR: bearpaw 5 trou

À : "Helitowcart \\(Vanair inc\\)" <info@helitowcart.com>

Trou 1po

Trou 1.5po

Bonne journée / Have a nice day\_\_\_\_\_

Simon Bernier

E-Mail : simonb@ats-ast.com

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Tel: (819) 601-8049 (Ext :1106)

Fax: (819) 377-7928

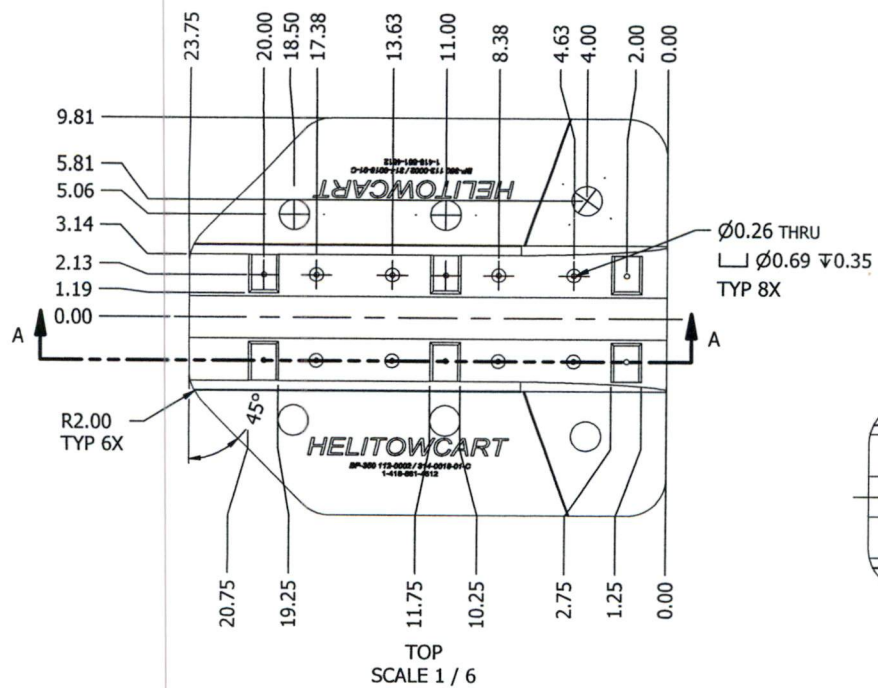
----- Fin du message transféré -----

26/08/2008

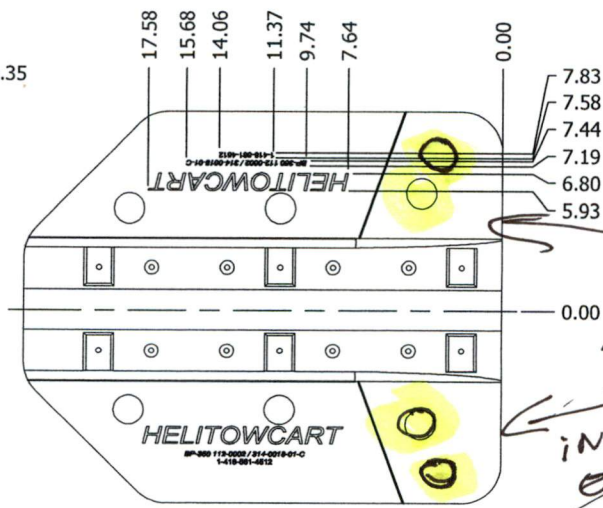
VNR106-S

1 OF 3

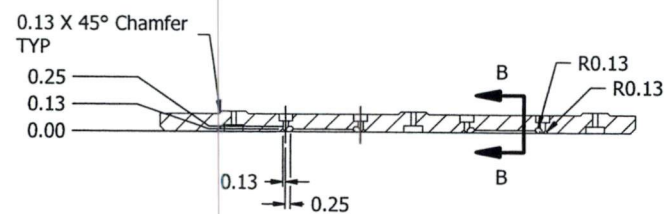
REVISIONS			
1	2	3	4
REWORKABLE	NONREWORKABLE	NOTE	NA
ZONE	REV	DESCRIPTION	
	R01	ADDITION OF STREAMLINE PAD CONFIGURATION	
	R02	ADDITION OF VENT HOLES ON THE STREAMLINE PAD	
	R03	MODIFICATION OF VENT HOLES ON THE STREAMLINE PAD	



TOP SCALE 1 / 6



TOP SCALE 1 / 6



DETAIL B SCALE 1 / 6

THE DESIGN DEPICTED IN THIS DRAWING IS THE EXCLUSIVE PROPERTY OF HELI TOW CART AND IN ACCEPTANCE OF THIS DRAWING THE RECIPIENT AGREES THAT IT WILL NOT BE USED FOR THE PURPOSE OF MANUFACTURE OR PROCUREMENT OF THE PART OR ASSEMBLY SHOWN HEREIN REPRODUCED OR OTHERWISE COPIED OR DISCLOSED TO ANY OTHER PERSON OR PARTY EXCEPT AS AUTHORIZED IN WRITING BY HELI TOW CART

SECTION A-A SCALE 1 / 6

		1	1	314 001B 01 S	PAD STREAMLINE	POLYETHYLENE LAMINATE	BLACK	1
		ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL	SPECIFICATION	SIZE
					UNLESS OTHERWISE SPECIFIED: DRAWN: S. REHNER DATE: 31/07/2005 DESIGNED: S. REHNER 31/07/2005 CHECKED: 31/07/2005 STRESS: WEIGHT: MATERIAL: MULTIPLE: SCALE: 4:1 TYPICAL FINISH: R.A. BUT: 100 MICRONS	31/07/2005 31/		



## Master Document List

Helitowcart

### Eurocopter Model AS 350/355 Series Helicopters Installation of BearPaw Model BP350

Report: HTC-MDL-BP-AS350/355-1000 (Rev D)

APPROVED BY:

  
Mirko Zgela

DATE: JULY 27, 2008

Design Approval Representative DAR #310

*upline*

Revision	Revision Date	Revision of Entry	Entered by
A	Nov 22, 2006	Initial issue	N/A
B	Jan 28, 2007	Revision performed to the Installation Instructions (Doc # HTC-314-0020-00-B).	M.Z.
C	Feb 28, 2007	Addition of streamline pad configuration.	M.Z.
D	July 25, 2008	Addition of vents holes in the streamline pad.	M.Z.

## 1.0 MASTER DOCUMENTS

Document #	Title	Revision Status	Approval by	Date
AAC-CPL-BP-AS350/355-1000	Compliance Plan – Eurocopter Model AS350/355 Series Helicopters – Installation of BearPaw Model BP350	NC	DAR 310	Nov 22, 2006
HTC-314-0020-00-C	BearPaw Model BP350 – Installation Instructions – AS350/355 Series Helicopters	C	DAR 310	Feb 28, 2008
AAC-STR-BP-AS350/355-1000	Structural Substantiation – Helitowcart Inc. BearPaw Model BP350	NC	DAR 310	Nov 20, 2006
AAC-FTR-C-GZNC	Simple External Modification – Applicant's Flight Test Plan/Report	NC	DAR 310	Nov 21, 2006
HTS-EO-0709-002	Bear Paw Model BP350 Vent Holes	NC	DAR 310	July 25, 2008
HTC-MEM-0709-001	Memorandum – Vent Hole BP350 BearPaw	NC	DAR 310	July 25, 2008

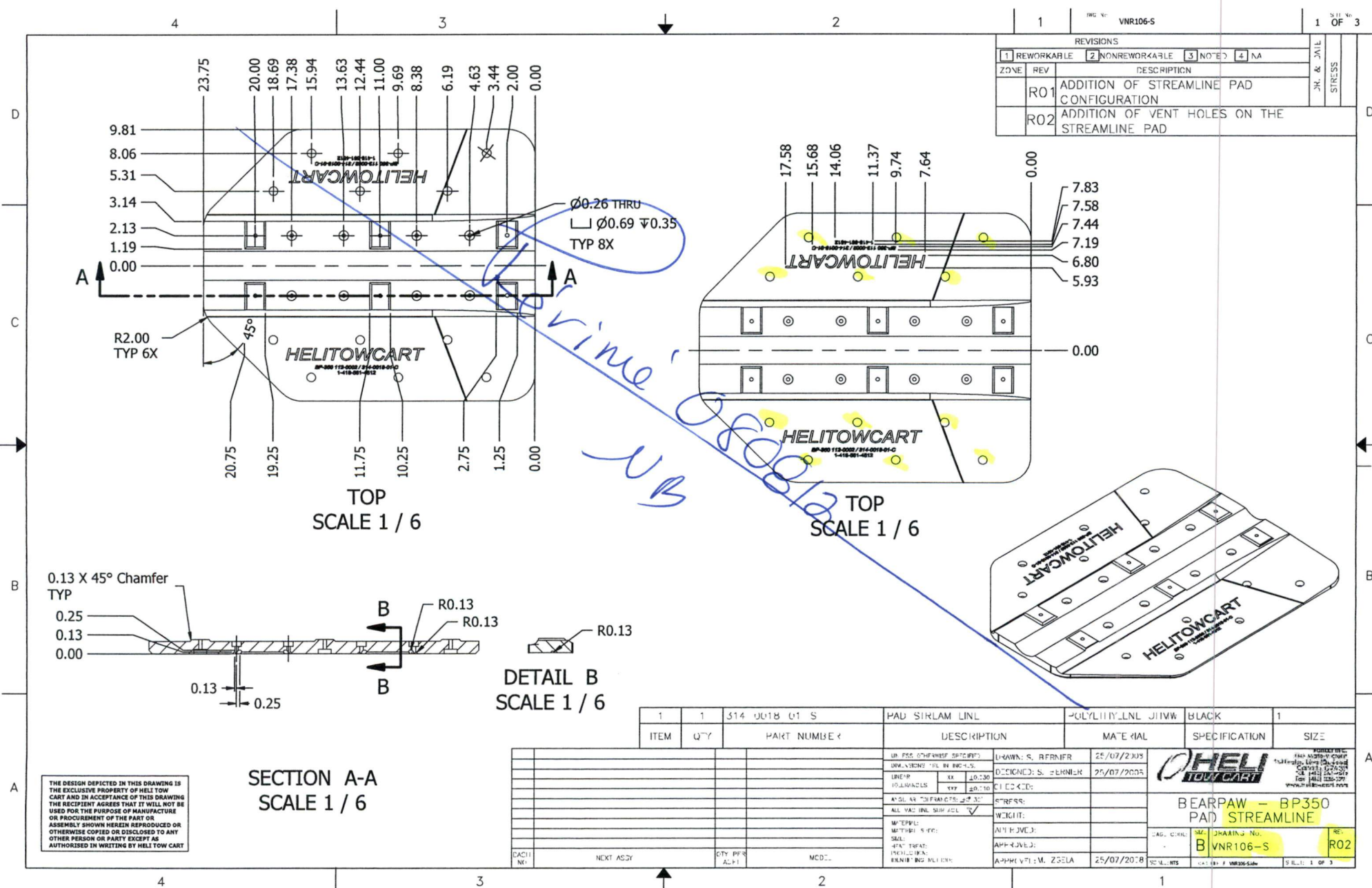
## 2.0 MASTER DRAWINGS

Drawings #	Title	Revision Status	Approval by	Date
112-0002-00	BearPaw BP350 - Assembly	B	DAR 310	Nov 20, 2006
112-0002-00-S	BearPaw BP350 – Assembly Streamline	B	DAR 310	July 25, 2008
VNR084	BearPaw – Iceblade	R01	DAR 310	Apr 24, 2006
VNR085	BearPaw – Iceblade Threaded Rod	R01	DAR 310	Apr 24, 2006
VNR086	BearPaw – Iceblade Assembly	R01	DAR 310	Apr 24, 2006
VNR106	BearPaw BP350 - Pad	R02	DAR 310	Sept 26, 2006
VNR106-S	BearPaw BP350 – Pad Streamline	R02	DAR 310	July 25, 2008
VNR107	BearPaw BP350 – U Shaped Clip	R01	DAR 310	Sept 29, 2006
VNR089	Bearpaw – Slotted Clip Support	R04	DAR 310	July 31, 2006
VNR099	Filler Block ¼"	R01	DAR 310	Aug 8, 2006



### 3.0 REFERENCE DOCUMENTS

Document #	Title	Revision Status	Approval by	Date
314-0009-01-A	Ultra High Molecular Weight Polyethylene – Typical Properties	A	N/A	May 24, 2006
314-0008-01-A	Propriétés du UHMW TIVAR	A	N/A	May 24, 2006
314-0017-05-A	Heat Shrink Specifications	A	N/A	Sept 6, 2006



4

3

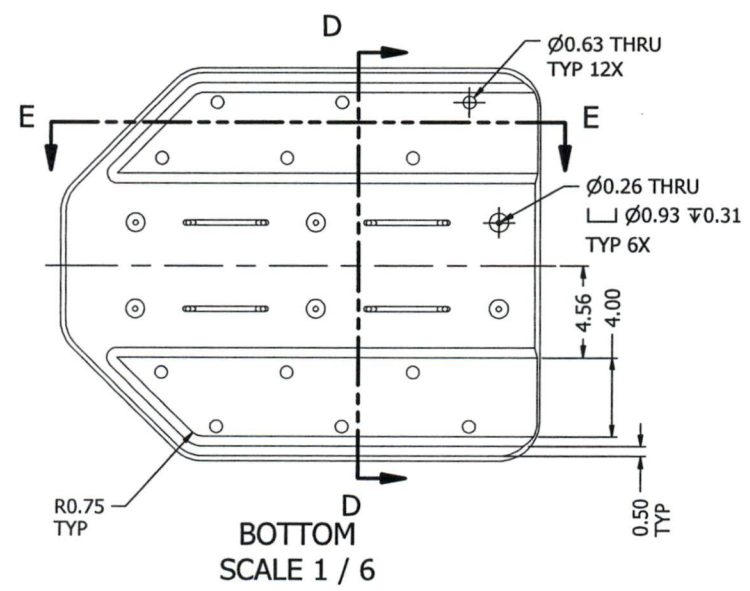
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1

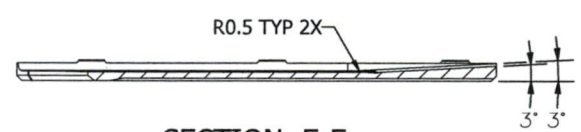
FIG. NO. VNR106-S

2 OF 3

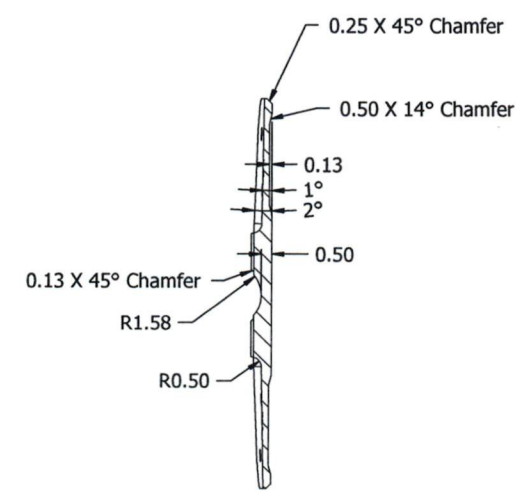
REVISIONS			
1	REWORKABLE	2	NONREWORKABLE
3	NOTED	4	NA
ZONE	REV	DESCRIPTION	
	R01	ADDITION OF STREAMLINE PAD CONFIGURATION	
	R02	ADDITION OF VENT HOLES ON THE STREAMLINE PAD	



BOTTOM  
SCALE 1 / 6




SECTION E-E  
SCALE 1 / 6



SECTION D-D  
SCALE 1 / 6

THE DESIGN DEPICTED IN THIS DRAWING IS THE EXCLUSIVE PROPERTY OF HELI TOW CART AND IN ACCEPTANCE OF THIS DRAWING THE RECIPIENT AGREES THAT IT WILL NOT BE USED FOR THE PURPOSE OF MANUFACTURE OR PROCUREMENT OF THE PART OR ASSEMBLY SHOWN HEREIN REPRODUCED OR OTHERWISE COPIED OR DISCLOSED TO ANY OTHER PERSON OR PARTY EXCEPT AS AUTHORIZED IN WRITING BY HELI TOW CART

				UNLESS OTHERWISE SPECIFIED		DRAWN: S. REHNER		25/07/2005			
				DIMENSIONS IN INCHES		DESIGNED: S. REHNER		25/07/2005			
				UNIT: IN		CHECKED:				BEARPAW - BP350 PAD STREAMLINE	
				TOLERANCES		STRESS:					
				ANGLES TO DIMENSIONS		WEIGHT:				SAG. CHIL	
				ALL VERTICAL DIMENSIONS		APPROVED:					
				MATERIALS		APPROVED: M. ZGELA		25/07/2005		SAG. CHIL	
				MATERIALS		APPROVED: M. ZGELA		25/07/2005			
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				MATERIALS		APPROVED: M. ZGELA		25/07/2005			
				MATERIALS		APPROVED: M. ZGELA		25/07/2005		SAG. CHIL	
				MATERIALS		APPROVED: M. ZGELA		25/07/2005			
				MATERIALS		APPROVED: M. ZGELA		25/07/2005		SAG. CHIL	
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				MATERIALS		APPROVED: M. ZGELA		25/07/2005		SAG. CHIL	
				MATERIALS		APPROVED: M. ZGELA		25/07/2005			
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				MATERIALS		APPROVED: M. ZGELA		25/07/2005			
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				MATERIALS		APPROVED: M. ZGELA		25/07/2005			
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				MATERIALS		APPRO					

1. ZONE D = ALL NON-SHADED AREA

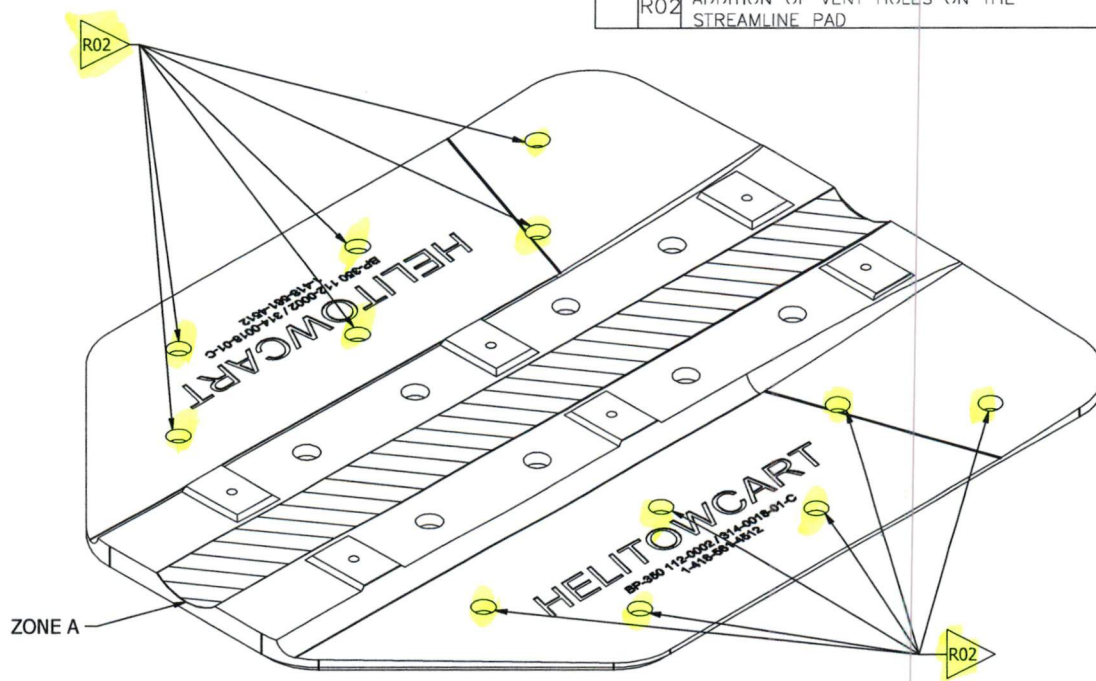


TOP



BOTTOM

THE DESIGN DEPICTED IN THIS DRAWING IS THE EXCLUSIVE PROPERTY OF HELI TOW CART AND IN ACCEPTANCE OF THIS DRAWING THE RECIPIENT AGREES THAT IT WILL NOT BE USED FOR THE PURPOSE OF MANUFACTURE OR PROCUREMENT OF THE PART OR ASSEMBLY SHOWN HEREIN REPRODUCED OR OTHERWISE COPIED OR DISCLOSED TO ANY OTHER PERSON OR PARTY EXCEPT AS AUTHORISED IN WRITING BY HELI TOW CART



ISO

1		REVISED BY: VNR106-S		3 OF 3	
REVISIONS					
1 REWORKABLE		2 NONREWORKABLE		3 NOTE	
4 NA					
ZONE	REV	DESCRIPTION			JR. & JNL
	R01	ADDITION OF STREAMLINE PAD CONFIGURATION			STRESS
	R02	ADDITION OF VENT HOLES ON THE STREAMLINE PAD			

[illegible]



1		DWG No 112-0002-00-S.DWG		1		SHEET No 1 OF 1									
REVISIONS						DR. & DATE		STRESS							
1		REWORKABLE		2		NONREWORKABLE		3		NOTED		4		NA	
ZONE		REV		DESCRIPTION											
		-													

HELTOWCART  
BEARPAW -BP 350 ASSEMBLY

112-0002-00-S.DWG

QTY	ITEM	PART NUMBER	DESCRIPTION	MATERIAL	SPECIFICATION	SIZE	ZONE
14	9	262-0001-17-A	NUT MS20365-42B			1/4-28	XXX
20	8	263-0001-17-A	WASHER AN960-416			1/4	XXX
6	7	261-0001-17-A	BOLT AN4-14A			1/4-28 UNF	XXX
4	6	314-0005-15-A	ICEBLADE ASSEMBLY				XXX
6	5	314-0012-01-A	FILLER BLOCK			1/4"	XXX
6	4	314-0007-15-B	SLOTTED CLIP SUPPORT				XXX
3	3	314-0021-01-A	SHRINK			1" x 6 1/4"	XXX
3	2	314-0019-15-A	U SHAPED CLIP				XXX
1	1	314-0018-015-A	PAD	POLYETHYLENE UHMW	BLACK	1"	XXX
-1	ITEM	PART NUMBER	DESCRIPTION	MATERIAL	SPECIFICATION	SIZE	ZONE
QTY							SHEET

UNLESS OTHERWISE SPECIFIED

DIMENSIONS ARE IN INCHES

LINEAR TOLERANCES: XX ±0.030 XXX ±0.010

ANGULAR TOLERANCES: ±0°30'

ALL MACHINING SURFACES: ☒ ☐

MATERIAL: MATERIAL SPEC: SIZE: HEAT TREAT: IDENTIFYING METHOD:

DRAWN: Y.MARCHAND 28/02/2008

DESIGNED: S.BERNIER 28/02/2008

CHECKED:

STRESS:

WEIGHT:

APPROVED:

APPROVED: M.ZGELA 29/02/2008

SCALE: 1:1

DATE FILE: 112-0002-00-S.DWG

SHEET: 1 OF 1

Vendor Inc.  
24482011645 (24482011645)  
120212, 57A 137  
Tel: (418) 861-1512  
Fax: (418) 868-2771  
www.heltoinc.com

BEARPAW -BP 350 ASSEMBLY

CAGE CODE: B112-0002-00-S

SIZE: B112-0002-00-S

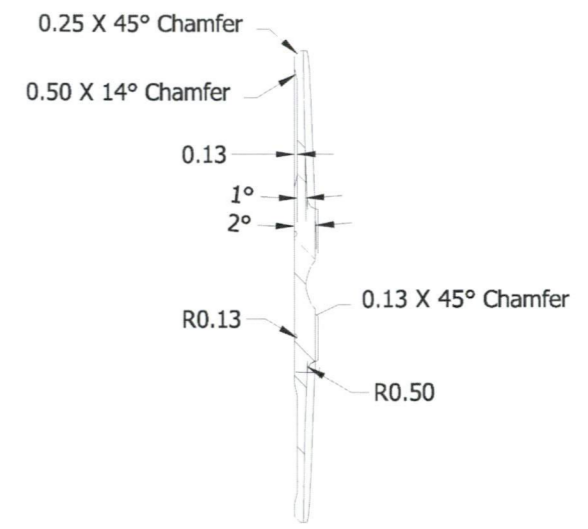
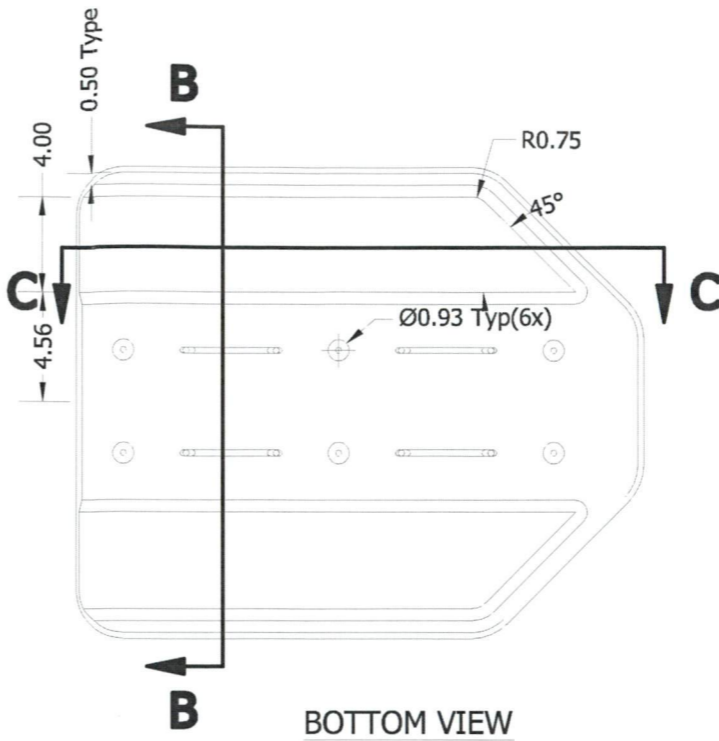
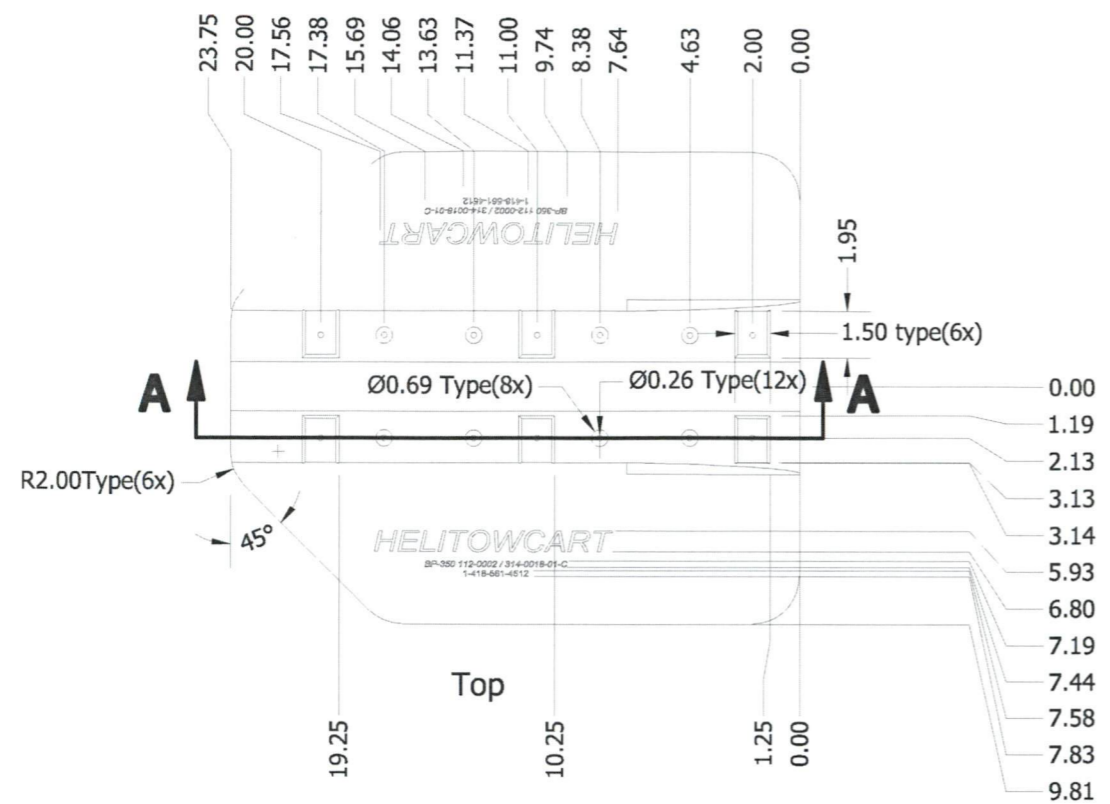
DRAWING No: A

REV: A

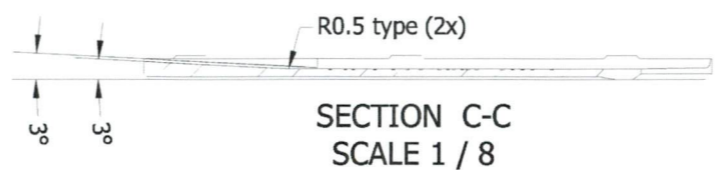
THIS DRAWING IS THE PROPERTY OF HELTOWCART AND IS NOT TO BE REPRODUCED OR TRANSMITTED IN ANY FORM OR BY ANY MEANS, ELECTRONIC OR MECHANICAL, INCLUDING PHOTOCOPYING, RECORDING, OR BY ANY INFORMATION STORAGE AND RETRIEVAL SYSTEM, WITHOUT PERMISSION IN WRITING BY HELTOWCART.

112-0002-00-S.DWG

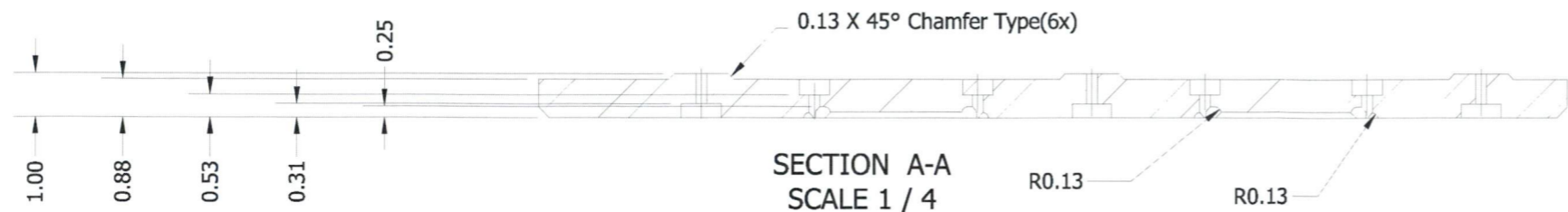
1		DWG No VNR106-S.DWG		1		SHT No OF 2		
REVISIONS						DR. & DATE	STRESS	
1 Reworkable 2 Nonreworkable 3 Noted 4 NA								
Zone		Rev		Description				



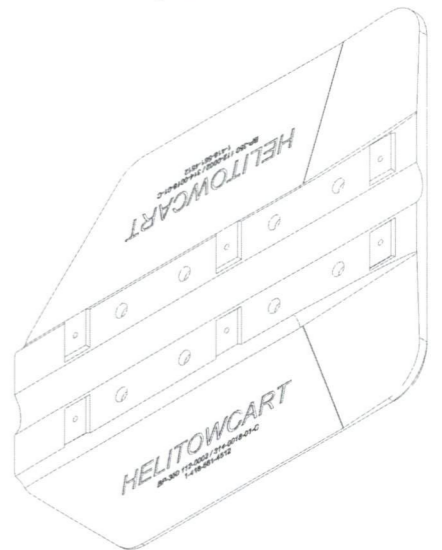
SECTION B-B  
SCALE 1 / 8



SECTION C-C  
SCALE 1 / 8



SECTION A-A  
SCALE 1 / 4



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1	1	314-0018-01-S	PAD	POLYETHYLENE UHMW	BLACK	1"	XXX
-1	ITEM	PART NUMBER	DESCRIPTION	MATERIAL	SPECIFICATION	SIZE	ZONE
QTY							SHEET
				UNLESS OTHERWISE SPECIFIED	DRAWN: Y.MARCHAND	28/02/2008	 Vanair Inc. 660, Marie-Victoria St-Hilaire, Lévis (Québec) Canada, G7A 3J7 Tel (418) 561-4512 Fax (418) 536-2291 www.helitowcart.com
				DIMENSIONS ARE IN INCHES.	DESIGNED: S.BERNIER	28/02/2008	
				LINEAR TOLERANCES: XX ±0.030 XXX ±0.010	CHECKED:		
				ANGULAR TOLERANCES: ±0°30'	STRESS:		
				ALL MACHINE SURFACE	WEIGHT:		CAGE CODE: B SIZE: VNR106-S DRAWING No. VNR106-S SCALE: 1:8 CAD FILE # VNR106-S.DWG SHEET: 1 OF 2
				MATERIAL SPEC:	APPROVED:		
				SIZE:	APPROVED:		
				HEAT TREAT:	APPROVED: M.ZGELA	29/02/2008	
				PROTECTION:			
				IDENTIFYING METHOD:			
DASH NO	NEXT ASSY	QTY PER ACFT	MODEL				

	DR. & DATE	STRESS
--	------------	--------

1. ZONE E = ALL NON-SHADED AREA



BOTTOM VIEW

[illegible]

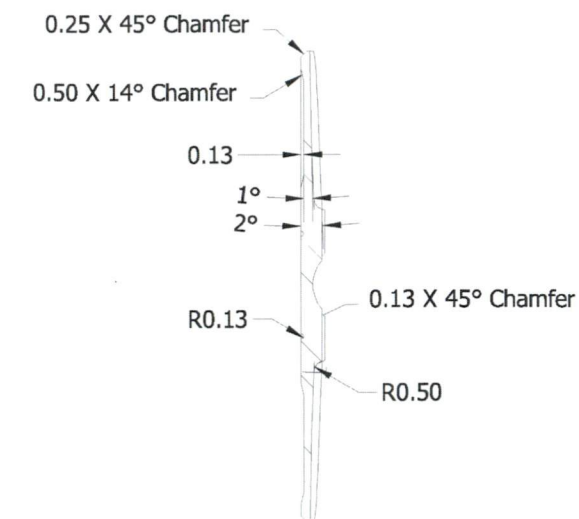
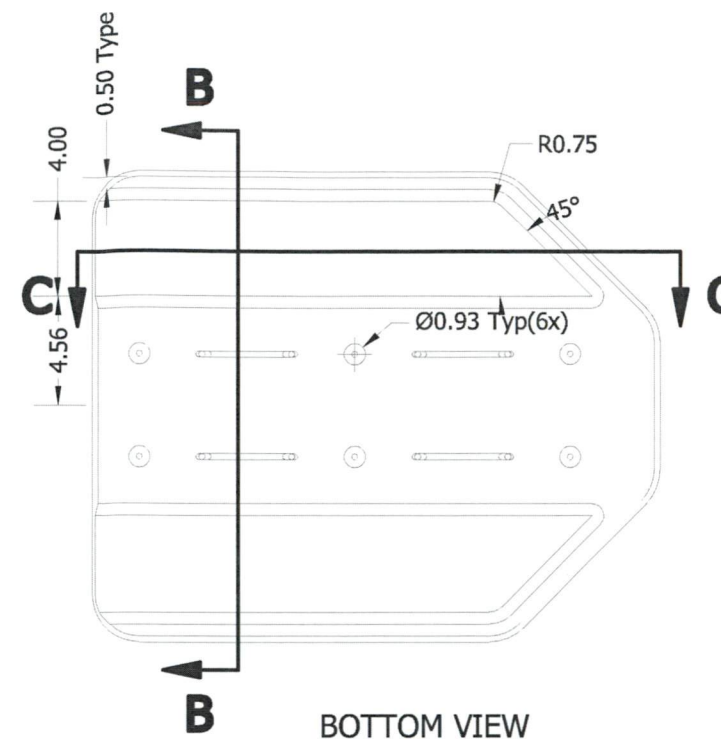
**HELI**  
**TOW CART**

Vanair Inc.  
860, Marie-Victorin  
St-Hélène, Lévis (Québec)  
Canada, G7A 3S9  
Tél. (418) 561-4512  
Fax (418) 836-2291  
[www.heliotowcart.com](http://www.heliotowcart.com)

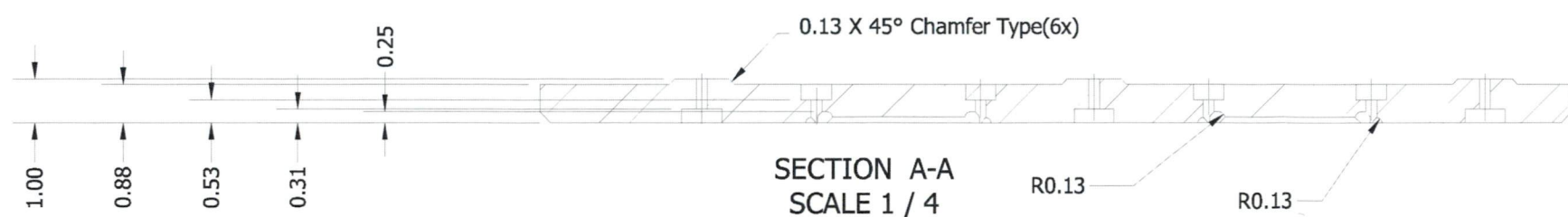
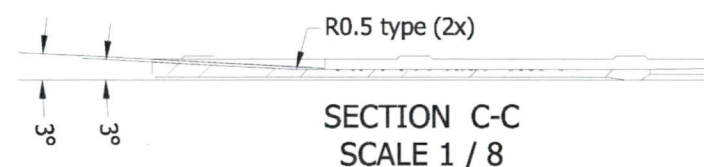
BEARPAW -BP 350  
PAD STREAMLINE


CAGE CODE: -	SIZE B	DRAWING No. VNR106-S	REV A
SCALE: 1:8	CAD FILE VNR106-S.DWG	SHEET: 2 OF 2	

DR. & DATE
STRESS



SECTION B-B  
SCALE 1 / 8



1	1	314-0018-01-S	PAD	POLYETHYLENE UHMW	BLACK	1"	XOL XOL
-1	ITEM	PART NUMBER	DESCRIPTION	MATERIAL	SPECIFICATION	SIZE	ZONE
QTY							SHEET
			UNLESS OTHERWISE SPECIFIED DIMENSIONS ARE IN INCHES.	DRAWN: Y.MARCHAND	28/02/2008	 <div style="display: flex; justify-content: space-between; font-size: 0.8em;"> <div> <b>Vanair Inc.</b>  866, Marie-Victoria  514-662-0474 (Toll-free)  Canada, G7A 3S7  Tél. (418) 561-1512  Fax (418) 636-2291  www.hellicart.com </div> <div> <b>BEARPAW — BP 350</b>  <b>PAD STREAMLINE</b> </div> </div>	
			LINEAR TOLERANCES: XX ±0.030 XXX ±0.010	DESIGNED: S.BERNIER	28/02/2008		
			ANGULAR TOLERANCES: ±0°30'	CHECKED:			
			ALL MACHINE SURFACE	STRESS:			
			MATERIAL:	WEIGHT:		CAGE CODE:      SIZE:      DRAWING No.      REV -      B      VNR106-S      A	
			MATERIAL SPEC:	APPROVED:			
			SIZE:	APPROVED:		SCALE: 1:8      CAD FILE # VNR106-S.DWG      SHEET: 1 OF 2	
			HEAT TREAT:	APPROVED: M.ZGELA	29/02/2008		
			PROTECTION:				
			IDENTIFYING METHOD:				
NEXT ASSY	QTY PER ACFT	MODEL					

THE DESIGN DEPICTED IN THIS DRAWING IS THE EXCLUSIVE PROPERTY OF HILL TOW CANT AND IN ACCEPTANCE OF THIS DRAWING THE RECIPIENT AGREES THAT IT WILL NOT BE USED FOR THE PURPOSE OF MANUFACTURE OR PROCUREMENT OF THE PART OR ASSEMBLY SHOWN HEREIN REPRODUCED OR OTHERWISE COPIED OR DISCLOSED TO ANY OTHER PERSON OR PARTY EXCEPT AS AUTHORIZED IN WRITING BY HILL TOW CANT



BEARPAW -BP 350  
PAD STREAMLINE

CAGE CODE:	SIZE	DRAWING No.
-	B	VNR106-S
SCALE: 1:8	CAD FILE: VNR106-S.DWG	SHEET: 1 of 2

DR. & DATE
STRESS

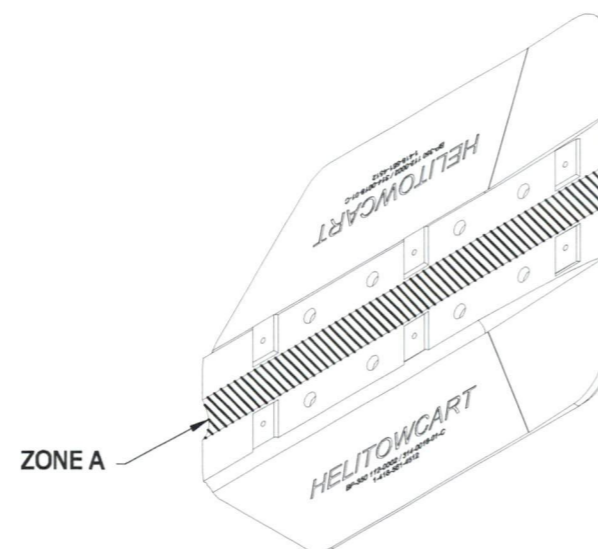
1. ZONE E = ALL NON-SHADED AREA



TOP VIEW



**BOTTOM VIEW**



**ZONE A**

THE DESIGN DEPICTED IN THIS DRAWING IS THE EXCLUSIVE PROPERTY OF HILL TOP CRYSTAL AND IN ACCEPTANCE OF THIS DRAWING THE RECIPIENT AGREES THAT IT WILL NOT BE USED FOR THE PURPOSE OF PROMOTION OR FURTHERMENT OF THE FACT OR OTHERWISE BEING HEREIN REPRODUCED OR OTHERWISE COPIED OR DISCLOSED TO ANY OTHER PERSON OR PARTY EXCEPT AS AUTHORIZED IN WRITING BY HILL TOP CRYSTAL

**HELI**  
**TOW CART**

Vanair Inc.  
860, Marie-Victorin  
St-Hélène, Lévis (Québec)  
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Tél. (418) 561-4512  
Fax (418) 836-2291  
[www.heliotowcart.com](http://www.heliotowcart.com)

BEARPAW -BP 350  
PAD STREAMLINE

CAGE CODE:	SIZE	DRAWING No.	REV
-	B	VNR106-S	A

SCALE: 1:8	CAD FILE: WR106-S.DWG	SHEET: 2 OF 2
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REVISIONS					DR. & DATE	STRESS	
1	REWORKABLE	2	NONREWORKABLE	3			NOTED
ZONE	REV	DESCRIPTION					
	1						



14	9	262-0001-17-A	NUT MS20365-428			1/4-28	XXXX
20	8	263-0001-17-A	WASHER AN960-416			1/4	XXXX
6	7	261-0001-17-A	BOLT AN4-14A			1/4-28 UNF	XXXX
4	6	314-0005-15-A	ICEBLADE ASSEMBLY				XXXX
6	5	314-0012-01-A	FILLER BLOCK			1/4"	XXXX
6	4	314-0007-15-B	SLOTTED CLIP SUPPORT				XXXX
3	3	314-0021-01-A	SHRINK			1" x 6 1/4"	XXXX
3	2	314-0019-15-A	U SHAPED CLIP				XXXX
1	1	314-0018-01-S-A	PAD STREAMLINE	POLYETHYLENE UHMW	BLACK	1"	XXXX
-1							
QTY	ITEM	PART NUMBER	DESCRIPTION	MATERIAL	SPECIFICATION	SIZE	ZONE SHEET

[illegible]

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**HELI**  
**TOW CART**

BEARPAW -BP 350  
ASSEMBLY

CAGE CODE:	SIZE	DRAWING No.	REV
-	B	112-0002-00-S	A
SCALE: 1:4	CAD FILE: 112-0002-00-5.DWG	SHEET: 1 OF 1	

4

3

2

1

DWG No 112-0002-00-S.DWG

SHT No  
OF 1

## REVISIONS

1 REWORKABLE 2 NONREWORKABLE 3 NOTED 4 NA

ZONE REV DESCRIPTION

DR. &amp; DATE

STRESS

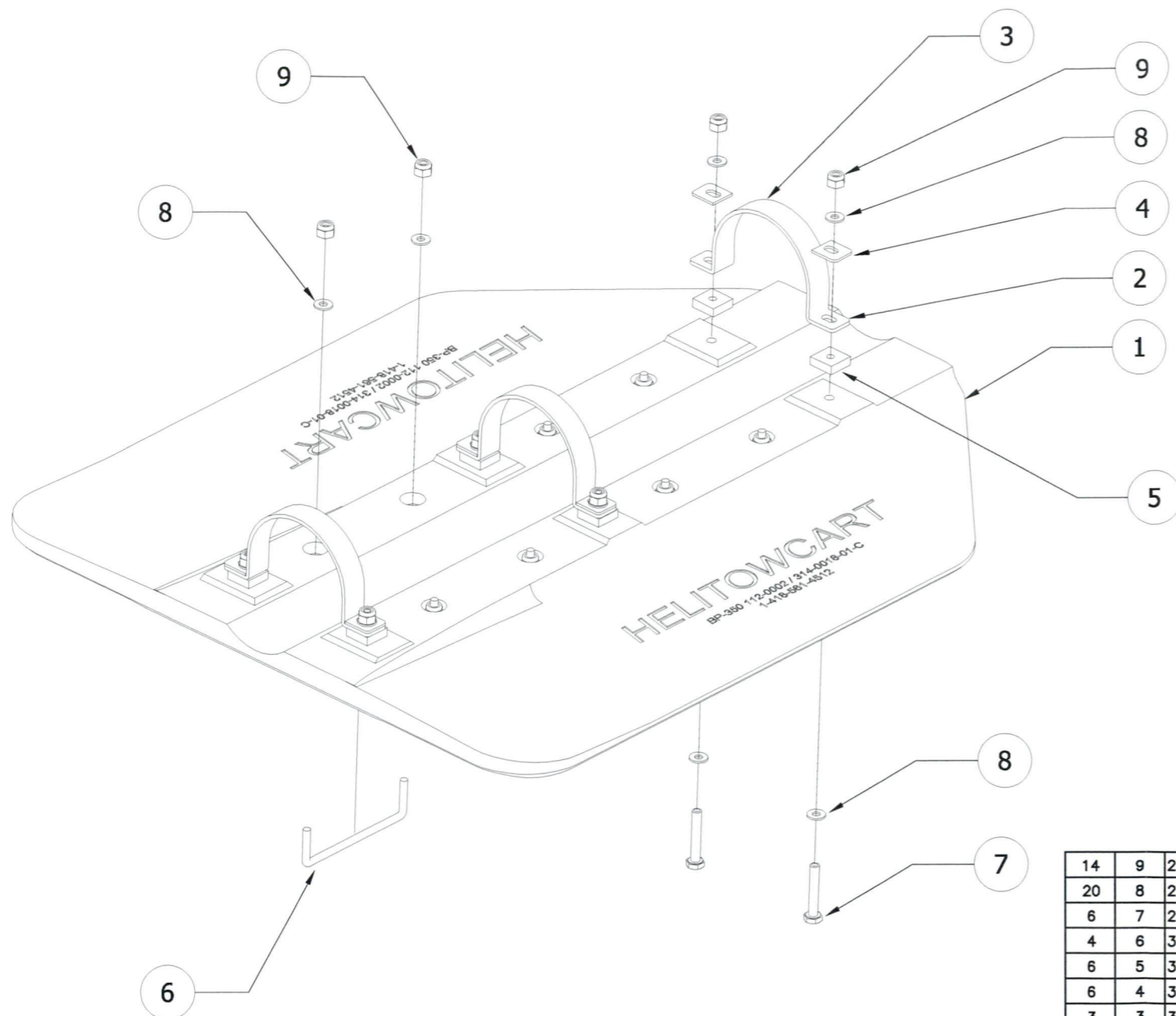
D

C

112-0002-00-S.DWG

B

A



NOTE: ICEBLADE ASSEMBLY, ITEM 6, CAN  
BE OMITTED FROM INSTALLATION  
(OPTIONAL)

14	9	262-0001-17-A	NUT MS20365-428			1/4-28	XXXX
20	8	263-0001-17-A	WASHER AN960-416			1/4	XXXX
6	7	261-0001-17-A	BOLT AN4-14A			1/4-28 UNF	XXXX
4	6	314-0005-15-A	ICEBLADE ASSEMBLY				XXXX
6	5	314-0012-01-A	FILLER BLOCK			1/4"	XXXX
6	4	314-0007-15-B	SLOTTED CLIP SUPPORT				XXXX
3	3	314-0021-01-A	SHRINK			1" x 6 1/4"	XXXX
3	2	314-0019-15-A	U SHAPED CLIP				XXXX
1	1	314-0018-01-S-A	PAD STREAMLINE	POLYETHYLENE UHMW	BLACK	1"	XXXX
-1	ITEM	PART NUMBER	DESCRIPTION	MATERIAL	SPECIFICATION	SIZE	ZONE
QTY							SHEET

THE DESIGN INDICATED ON THIS DRAWING IS THE  
EXCLUSIVE PROPERTY OF HELI TOW CART AND IN  
ACCEPTANCE OF THIS DRAWING THE RECIPIENT  
AGREES THAT IT WILL NOT BE USED FOR THE  
PURPOSE OF MANUFACTURING OR PREPARATION OF  
THE PART OR ASSEMBLY SHOWN HEREIN  
REPRODUCED OR OTHERWISE COPIED OR  
DISCLOSED TO ANY OTHER PERSON OR PARTY  
WITHOUT THE WRITTEN PERMISSION OF HELI TOW  
CART

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Work Order

FAX TRANSMISSION

Date:

2008.07.30

Pages:

4

To:

JACOB CLEMAN

Fax:

From:

Vanair

Object:

MODIF. DE PDS BP350 - (Fencer Trou)

JACOB,  
voici dessin pour PDS à Fencer.

- 1) Fencer PDS en inventaire non assemblés (Pte 3A) Lot: W080710-01 (Pte 4 PDS)  
(ie 2 PDS en stock)
- 2) " " " KIT. Lots #080312-01

- SVP suivre DIM. DES DESSINS.
- " Réviser pour 6 août 2008.

Ther,  
Patrick

Vanair  
800-361-4512  
1-418-561-4512

Scenario 1

Page 1 of 1

12 small holes

**Nathalie Barbeau**

**From:** Nathalie Barbeau [nbarbeau@helitowcart.com]  
**Sent:** July 30, 2008 2:47 PM  
**To:** 'CBoule@canadianhelicopters.com'  
**Cc:** 'Mirko Zgela'  
**Subject:** Helitowcart: Service Bulletin BearPaws BP350 - Vent holes

Dear Claude,  
Find attached the Service bulletin with applicable reference documents to proceed with piercing vent holes to BP350 Streamline pads.

According to our records, you Canadian Helicopters owns 10 pairs of these Streamlined bearpaws.  
Find below our reference data for your convenience:

<b>Our serial no:</b>	<b>Our invoice no:</b>	<b>Can Heli PO no:</b>
HTC-RC080522-01	2793/ Raymond Mantha	166880
HTC-RC080522-02	2793/ Raymond Mantha	
HTC-RC080522-03	2793/ Raymond Mantha	
HTC-RC080522-04	2793/ Raymond Mantha	
HTC-RC080522-05	2793/ Raymond Mantha	
HTC-RC080312-01	2775/ Sylvain Miron	166621
HTC-RC080312-02	2775/ Sylvain Miron	
HTC-RC080312-03	2833/ Sylvain Miron	167609
HTC-RC080311-01	2691/ Claude Boulé	164957
HTC-RC080211-01	2679/ Claude Boulé	164957

We do hope this meets your needs.  
Please do not hesitate to contact us for further details.

Kind Regards,

Ms Nathalie Barbeau  
General Manager

**Helitowcart** (Vanair inc.)  
860 Marie-Victorin, St-Nicolas, Levis,  
Quebec, Canada, G7A 3S9  
tel: +1 418 561 4512  
fax: +1 418 531 0772  
[nbarbeau@helitowcart.com](mailto:nbarbeau@helitowcart.com)  
[info@helitowcart.com](mailto:info@helitowcart.com)  
[www.helitowcart.com](http://www.helitowcart.com)

30/07/2008



Scenario 1

## Service Bulletin

**Service Bulletin no:** 080730 rev. a

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**Subject:** Vent hole additions to bearpaw pads

---

**Date:** 2008 07 30

**Reason:** Reduce possible suction when taking-off from muddy surfaces

**Reference documents:** BearPaw Model BP350- Engineering order- "HTC-EO-0709-002 Rev NC".  
BearPaw-BP350-PAD-STREAMLINE- "VNR106-S R02" (314-0018-01-S).

**Recommended actions:** Pierce 12 holes on each pad

**Guidance for actions:** Hole sizes to be drilled: 5/8" diameter (0.63")  
Use drawing no VNR106-S R02.  
Page 1 indicates hole positions,  
Page 2 indicates hole size,  
Page 3 indicates hole pattern (see R02 reference and linked arrows)

---

**Issued by :** Nathalie Barbeau,  
General Manager,  
Helitowcart enterprises.

860 Marie-Victorin, St-Nicolas, Quebec, Canada, G7A 3S9  
Tel: 418-561-4512, Fax: 418-836-2291  
email: [info@helitowcart.com](mailto:info@helitowcart.com)



# BearPaw Model BP350

## Engineering Order

<b>Title:</b> Bear Paw Model BP350 Vent Holes				<b>EO#:</b> HTS-EO-0709-002 Rev NC	
<b>Prepared by:</b> Simon Bernier	<b>Design:</b> N/A	<b>Mech:</b> N/A	<b>Stress:</b> N/A	<b>Approved:</b> Mirko Zgela (DAR #310)	<b>Date:</b> July 25, 2008
<b>A/C Effectivity:</b>	AS 350 D, B, B1, B2, B3 & BA AS 355				
<b>Reference Documents:</b>					
[a]	Drawings: #112-0002-00, BearPaw BP350 – Assembly, Rev B, dated Nov 20, 2006				
[b]	#VNR106-S, BearPaw BP350 Pad Streamline, Rev R02, dated Feb 29, 2008				
[c]	# HTC-MEM-0709-001, Memorandum – Vent Holes BP350 BearPaw, Rev NC, dated July 25, 2008				
<b>Reason for change:</b>  To reduce the possibility for the BearPaw to stick to the ground while performing landing & take off on muddy terrain.					
<b>Description of change:</b>  To create a continuous path for the air, a number of holes are drilled into the Bear Paw pads.					
<b>Previous Configuration:</b>  The old configuration was as per drawing #VNR106-S, BearPaw BP350 Pad Streamline, Rev A, dated Feb 29, 2008					
<b>New Configuration:</b>  The new configuration of Bear Paw is as per drawing #VNR106-S, BearPaw BP350 Pad Streamline, Rev R02, dated July 25, 2008.					
<b>Structural substantiation:</b> The introduction of the vent holes has a negligible effect on the strength of the BearPaw and is documented in the following memorandum # HTC-MEM-0709-001, Memorandum – Vent Holes BP350 BearPaw, Rev NC, dated July 25, 2008					



## BearPaw Model BP350

Rework Instructions:	
1	Drill the hole pattern as per drawing #VNR106-S, BearPaw BP350 Pad Streamline, Rev R02, dated July 25, 2008



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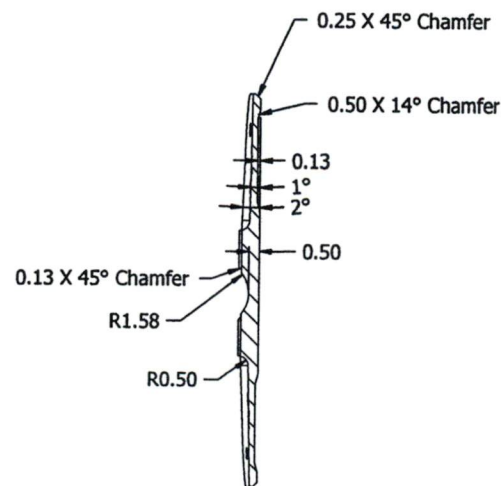
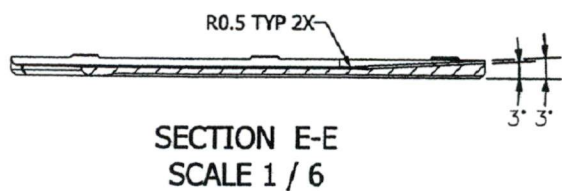
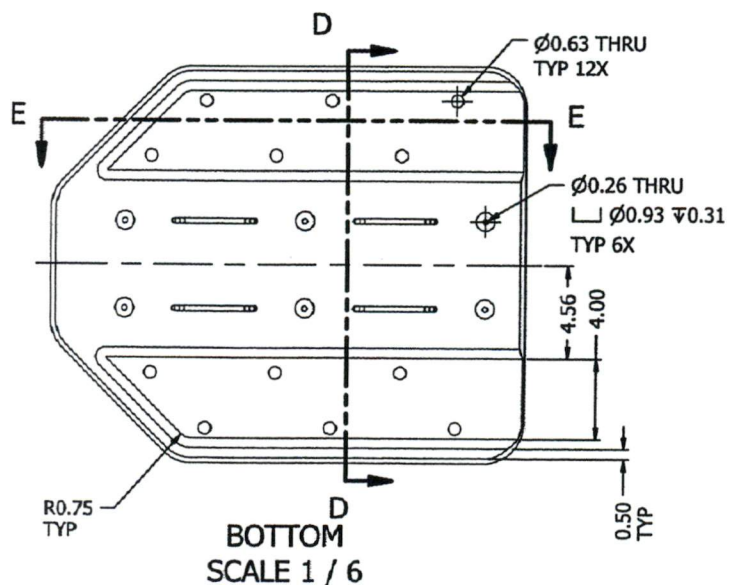
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VNR106-S


2

OF 3

REVISIONS			
1	REWORKABLE	2	NONREWORKABLE
3	NOTE	4	NA
ZONE	REV	DESCRIPTION	
	R01	ADDITION OF STREAMLINE PAD CONFIGURATION	
	R02	ADDITION OF VENT HOLES ON THE STREAMLINE PAD	

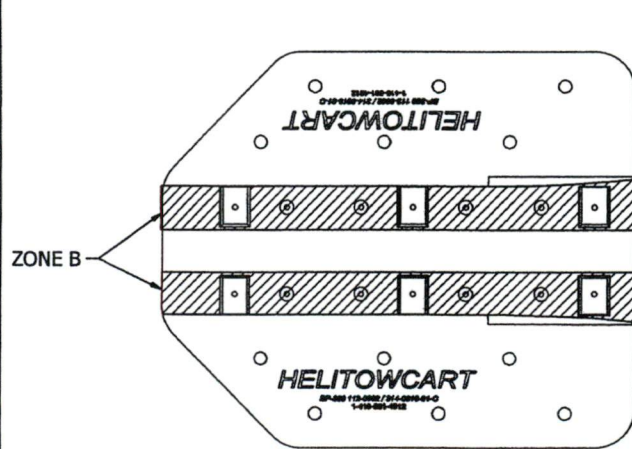


THE DESIGN DEPICTED IN THIS DRAWING IS THE EXCLUSIVE PROPERTY OF HELI TOW CART AND IN ACCEPTANCE OF THIS DRAWING THE RECIPIENT AGREES THAT IT WILL NOT BE USED FOR THE PURPOSE OF MANUFACTURE OR PROCUREMENT OF THE PART OR ASSEMBLY SHOWN HEREIN REPRODUCED OR OTHERWISE COPIED OR DISCLOSED TO ANY OTHER PERSON OR PARTY EXCEPT AS AUTHORIZED IN WRITING BY HELI TOW CART

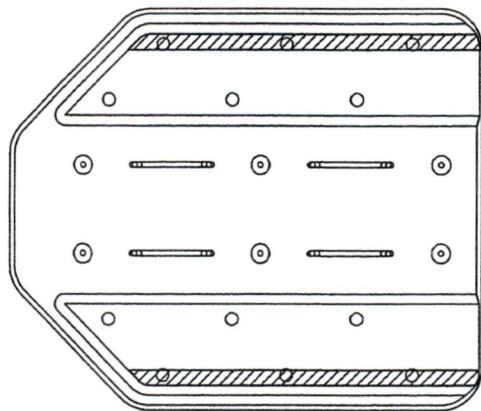
				UP FOR OTHER PARTS: L-1000, S. REFRIG	25/07/2005	 <div>BEARPAW - BP350 PAD STREAMLINE</div>		
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NOTE:

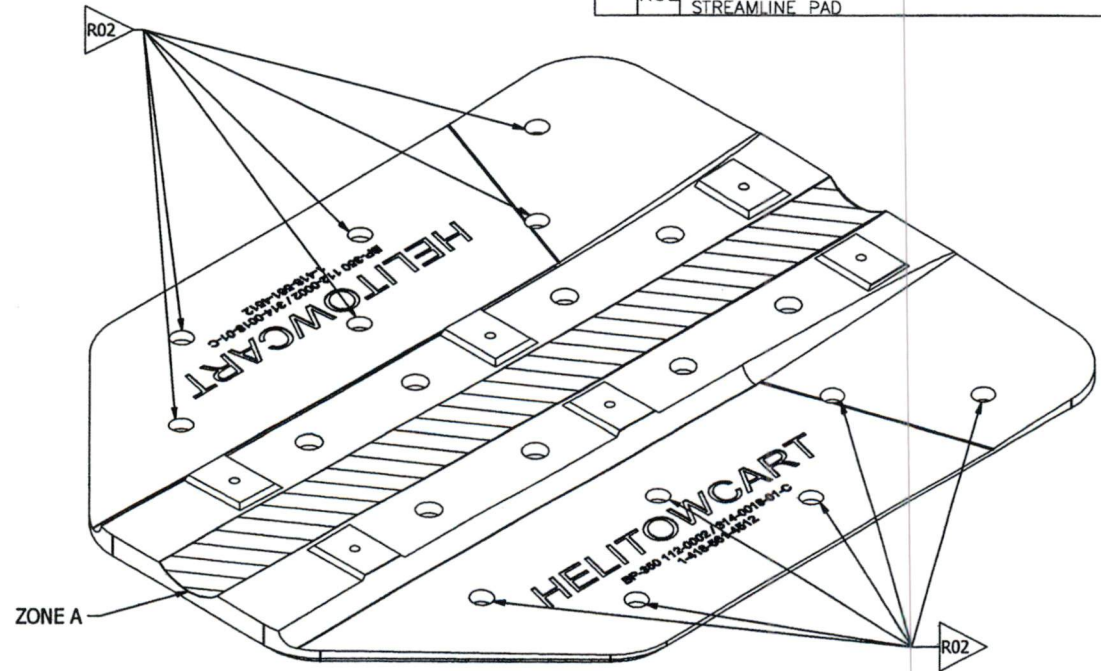
1. ZONE D = ALL NON-SHADED AREA



TOP




BOTTOM



ISO

REVISIONS				JNL	STRESS
1	2	3	4		
ZONE	REV	DESCRIPTION			
	R01	ADDITION OF STREAMLINE PAD CONFIGURATION			
	R02	ADDITION OF VENT HOLES ON THE STREAMLINE PAD			

THE DESIGN DEPICTED IN THIS DRAWING IS THE EXCLUSIVE PROPERTY OF HELITOW CART AND IN ACCEPTANCE OF THIS DRAWING THE RECIPIENT AGREES THAT IT WILL NOT BE USED FOR THE PURPOSE OF MANUFACTURE OR PROCUREMENT OF THE PART OR ASSEMBLY SHOWN HEREIN REPRODUCED OR OTHERWISE COPIED OR DISCLOSED TO ANY OTHER PERSON OR PARTY EXCEPT AS AUTHORIZED IN WRITING BY HELITOW CART

				UP PSE (CHANGED SPECIFY)	DESIGNED: S. REFRER	25/07/2009	 <div>FORNIN S.C. 1000 NORTH COUNTRY SUITE 100 1000 NORTH COUNTRY SUITE 100 1000 NORTH COUNTRY SUITE 100 1000 NORTH COUNTRY SUITE 100</div>	<b>BEARPAW - BP350 PAD - STREAMLINE</b>	REV: R02
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**Nathalie Barbeau**

**From:** Nathalie Barbeau [nbarbeau@helitowcart.com]

**Sent:** July 30, 2008 2:47 PM

**To:** 'CBoule@canadianhelicopters.com'

**Cc:** 'Mirko Zgela'

**Subject:** Helitowcart: Service Bulletin BearPaws BP350 - Vent holes

Dear Claude,  
Find attached the Service bulletin with applicable reference documents to proceed with piercing vent holes to BP350 Streamline pads.

According to our records, you Canadian Helicopters owns 10 pairs of these Streamlined bearpaws.  
Find below our reference data for your convenience:

<b>Our serial no:</b>	<b>Our invoice no:</b>	<b>Can Heli PO no:</b>
HTC-RC080522-01	2793/ Raymond Mantha	166880
HTC-RC080522-02	2793/ Raymond Mantha	
HTC-RC080522-03	2793/ Raymond Mantha	
HTC-RC080522-04	2793/ Raymond Mantha	
HTC-RC080522-05	2793/ Raymond Mantha	
HTC-RC080312-01	2775/ Sylvain Miron	166621
HTC-RC080312-02	2775/ Sylvain Miron	
HTC-RC080312-03	2833/ Sylvain Miron	167609
HTC-RC080311-01	2691/ Claude Boulé	164957
HTC-RC080211-01	2679/ Claude Boulé	164957

We do hope this meets your needs.  
Please do not hesitate to contact us for further details.

Kind Regards,

Ms Nathalie Barbeau  
General Manager

**Helitowcart** (Vanair inc.)  
860 Marie-Victorin, St-Nicolas, Levis,  
Quebec, Canada, G7A 3S9  
tel: +1 418 561 4512  
fax: +1 418 531 0772  
[nbarbeau@helitowcart.com](mailto:nbarbeau@helitowcart.com)  
[info@helitowcart.com](mailto:info@helitowcart.com)  
[www.helitowcart.com](http://www.helitowcart.com)

30/07/2008



## Service Bulletin

**Service Bulletin no:** 080730 rev. a

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**Subject:** Vent hole additions to bearpaw pads

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**Date:** 2008 07 30

**Reason:** Reduce possible suction when taking-off from muddy surfaces

**Reference documents:** BearPaw Model BP350- Engineering order- "HTC-EO-0709-002 Rev NC".  
BearPaw-BP350-PAD-STREAMLINE- "VNR106-S R02" (314-0018-01-S).

**Recommended actions:** Pierce 12 holes on each pad

**Guidance for actions:** Hole sizes to be drilled: 5/8" diameter (0.63")  
Use drawing no VNR106-S R02.  
Page 1 indicates hole positions,  
Page 2 indicates hole size,  
Page 3 indicates hole pattern (see R02 reference and linked arrows)

---

**Issued by :** Nathalie Barbeau,  
General Manager,  
Helitowcart enterprises.

860 Marie-Victorin, St-Nicolas, Quebec, Canada, G7A 3S9  
Tel: 418-561-4512, Fax: 418-836-2291  
email: [info@helitowcart.com](mailto:info@helitowcart.com)



## BearPaw Model BP350

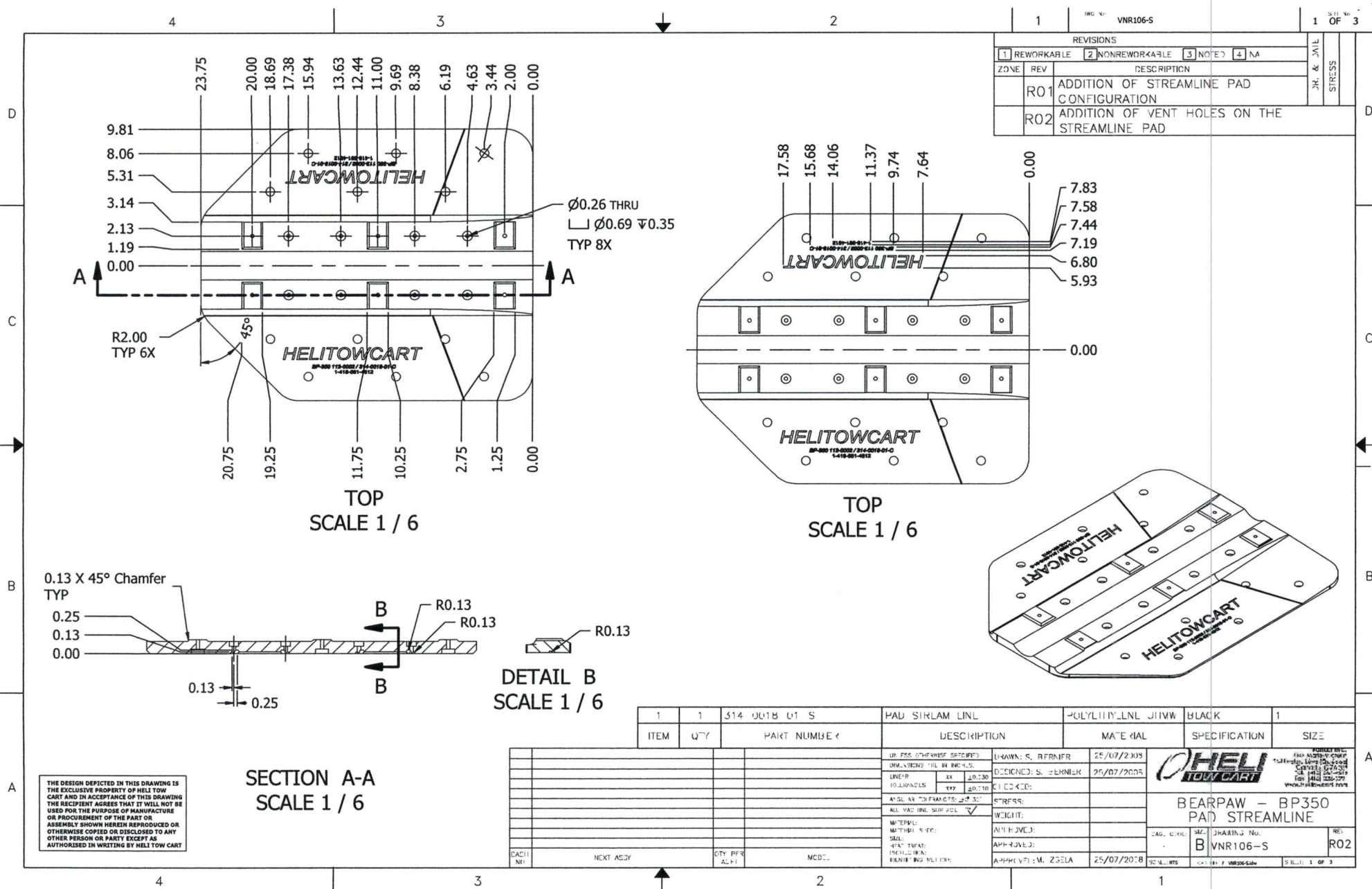
### Engineering Order

<b>Title:</b> Bear Paw Model BP350 Vent Holes				<b>EO#:</b> HTS-EO-0709-002 Rev NC	
<b>Prepared by:</b>  Simon Bernier	<b>Design:</b>  N/A	<b>Mech:</b>  N/A	<b>Stress:</b>  N/A	<b>Approved:</b>  Mirko Zgela (DAR #310)	<b>Date:</b>  July 25, 2008
<b>A/C Effectivity:</b>	AS 350 D, B, B1, B2, B3 & BA AS 355				
<b>Reference Documents:</b>					
[a]	Drawings: #112-0002-00, BearPaw BP350 – Assembly, Rev B, dated Nov 20, 2006				
[b]	#VNR106-S, BearPaw BP350 Pad Streamline, Rev R02, dated Feb 29, 2008				
[c]	# HTC-MEM-0709-001, Memorandum – Vent Holes BP350 BearPaw, Rev NC, dated July 25, 2008				
<b>Reason for change:</b>  To reduce the possibility for the BearPaw to stick to the ground while performing landing & take off on muddy terrain.					
<b>Description of change:</b>  To create a continuous path for the air, a number of holes are drilled into the Bear Paw pads.					
<b>Previous Configuration:</b>  The old configuration was as per drawing #VNR106-S, BearPaw BP350 Pad Streamline, Rev A, dated Feb 29, 2008					
<b>New Configuration:</b>  The new configuration of Bear Paw is as per drawing #VNR106-S, BearPaw BP350 Pad Streamline, Rev R02, dated July 25, 2008.					
<b>Structural substantiation:</b> The introduction of the vent holes has a negligible effect on the strength of the BearPaw and is documented in the following memorandum # HTC-MEM-0709-001, Memorandum – Vent Holes BP350 BearPaw, Rev NC, dated July 25, 2008					



## BearPaw Model BP350

Rework Instructions:	
1	Drill the hole pattern as per drawing #VNR106-S, BearPaw BP350 Pad Streamline, Rev R02, dated July 25, 2008



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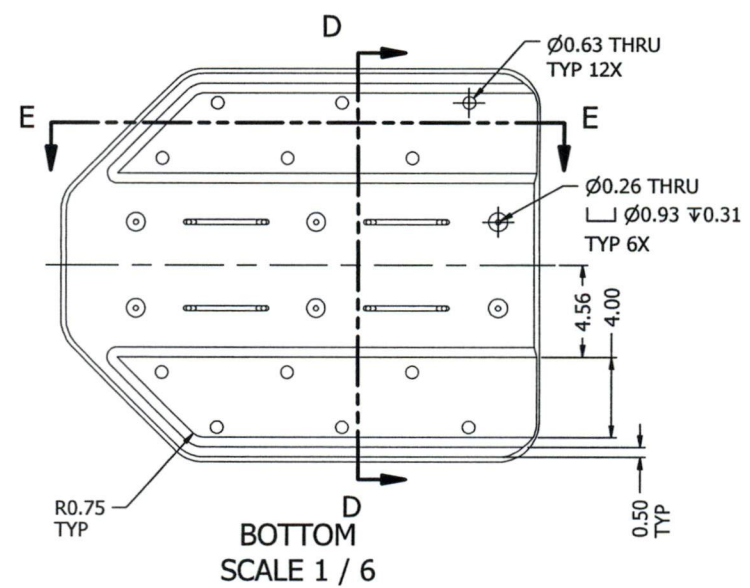
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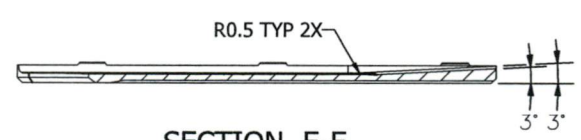
REV. VNR106-S

2 OF 3

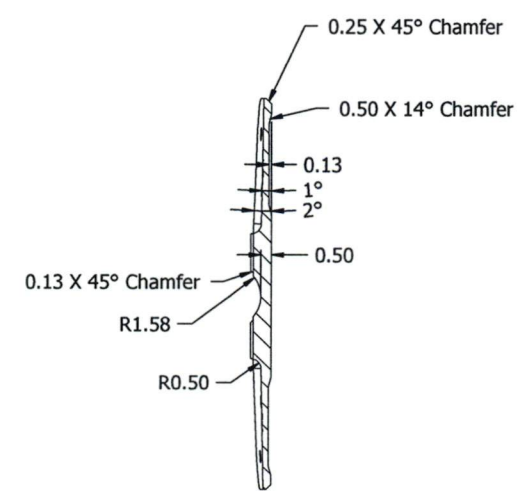
REVISIONS			
1	REWORKABLE	2	NONREWORKABLE
3	NOTED	4	NA
ZONE	REV	DESCRIPTION	
	R01	ADDITION OF STREAMLINE PAD CONFIGURATION	
	R02	ADDITION OF VENT HOLES ON THE STREAMLINE PAD	



SECTION D-D  
SCALE 1 / 6




SECTION E-E  
SCALE 1 / 6



SECTION D-D  
SCALE 1 / 6

THE DESIGN DEPICTED IN THIS DRAWING IS THE EXCLUSIVE PROPERTY OF HELI TOW CART AND IN ACCEPTANCE OF THIS DRAWING THE RECIPIENT AGREES THAT IT WILL NOT BE USED FOR THE PURPOSE OF MANUFACTURE OR PROCUREMENT OF THE PART OR ASSEMBLY SHOWN HEREIN REPRODUCED OR OTHERWISE COPIED OR DISCLOSED TO ANY OTHER PERSON OR PARTY EXCEPT AS AUTHORIZED IN WRITING BY HELI TOW CART

UNLESS OTHERWISE SPECIFIED:				DRAWN: S. REHNER	25/07/2008	 BEARPAW - BP350 PAD STREAMLINE
DIMENSIONS: ALL IN INCHES				DESIGNED: S. REHNER	25/07/2008	
TOLERANCES				CHECKED:		
ANGULAR TOLERANCES ±0.5°				STRESS:		
ALL VACUUM SURFACES				WEIGHT:		DAS. CODE: B DRAWING NO. VNR106-S REV. R02
W/THIN: 0.005				APPROVED:		
SIL:				APPROVED: M. ZSOLA	25/07/2008	
FAT TREAT:				SCALE: 1 / 6		
FINISHING METHOD:				SHEET 2 OF 3		
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VNR106-S

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NOTE:

1. ZONE D = ALL NON-SHADED AREA

D

ZONE B

C

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B

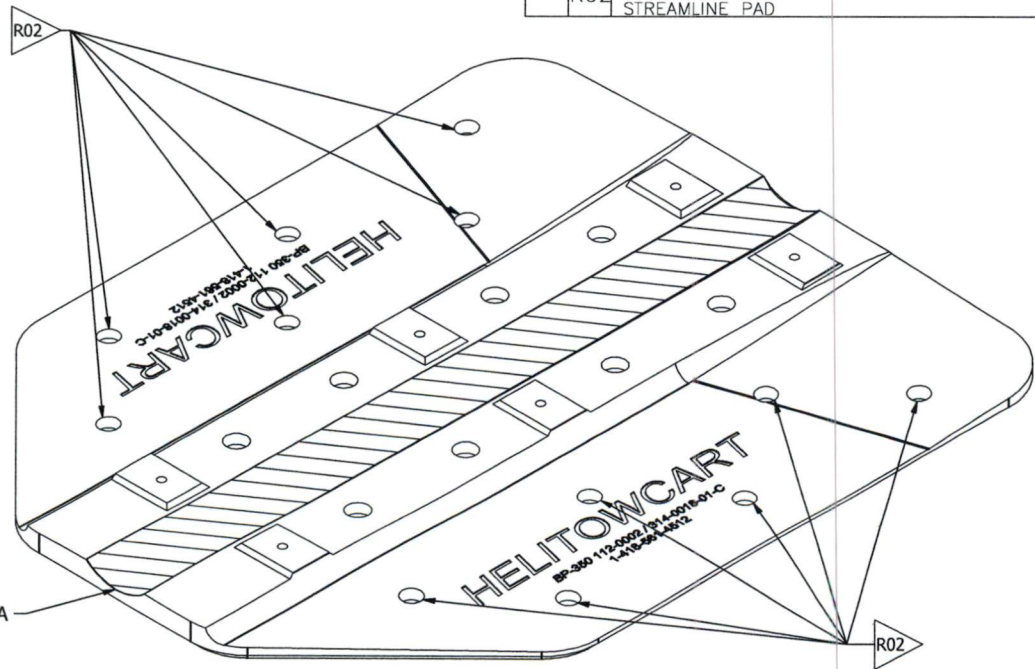
A

BOTTOM

ZONE C




ZONE A

ISO



REVISIONS						DATE	STRESS
1	REWORKABLE	2	NONREWORKABLE	3	NOTED		
ZONE	REV	DESCRIPTION					
	R01	ADDITION OF STREAMLINE PAD CONFIGURATION					
	R02	ADDITION OF VENT HOLES ON THE STREAMLINE PAD					

THE DESIGN DEPICTED IN THIS DRAWING IS THE EXCLUSIVE PROPERTY OF HELITOW CART AND IN ACCEPTANCE OF THIS DRAWING THE RECIPIENT AGREES THAT IT WILL NOT BE USED FOR THE PURPOSE OF MANUFACTURE OR PROCUREMENT OF THE PART OR ASSEMBLY SHOWN HEREIN REPRODUCED OR OTHERWISE COPIED OR DISCLOSED TO ANY OTHER PERSON OR PARTY EXCEPT AS AUTHORIZED IN WRITING BY HELITOW CART

				UNLESS OTHERWISE SPECIFIED	DRAWN: S. REINER	25/07/2005	 <div>FORBIDDEN TO BE USED FOR ANY OTHER PURPOSES WITHOUT THE WRITTEN PERMISSION OF HELI TOWCART LTD. 15418 HILL CREST DRIVE, SUITE 100, VANCOUVER, BC V6V 2G6 CANADA TEL: 604 273 2222 FAX: 604 273 2223 WWW.HELITOWCART.COM</div>	FORBIDDEN TO BE USED FOR ANY OTHER PURPOSES WITHOUT THE WRITTEN PERMISSION OF HELI TOWCART LTD. 15418 HILL CREST DRIVE, SUITE 100, VANCOUVER, BC V6V 2G6 CANADA TEL: 604 273 2222 FAX: 604 273 2223 WWW.HELITOWCART.COM		
				UNLESS OTHERWISE SPECIFIED	DESIGNED: S. REINER	25/07/2005		BEARPAW - BP350 PAD STREAMLINE		
				LINE: 10-0000	10-0000	10-0000			BEARPAW - BP350 PAD STREAMLINE	
				ALL VENT HOLES SHOWN	ALL VENT HOLES SHOWN	ALL VENT HOLES SHOWN				
				W/TEMP: 10-0000	W/TEMP: 10-0000	W/TEMP: 10-0000			BEARPAW - BP350 PAD STREAMLINE	
				APPROVED: M. ZIGLA	25/07/2005	25/07/2005				

**Nathalie Barbeau**

---

**From:** Nathalie Barbeau [nbarbeau@helitowcart.com]  
**Sent:** December 6, 2008 12:18 PM  
**To:** 'Stephane Poulin'  
**Subject:** Pour votre info seulement (Dessins de Pad BP350 avec 6 trous)  
**Attachments:** htc VNR106-S BearPaw Pad BP350 (2008 07 31 R03).pdf

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Bonjour Stéphane,

Je te transmets ce dessin pour votre info seulement. Je n'ai pas besoin de passer de commande pour le moment. Nous avons dû faire modifier les pads en y ajoutant des trous pour éviter la succion lors des décollages (notre nouveau modèle était sans trous). C'est la version à jour en cours.

Pour ton info, il nous reste plusieurs pads non percés mais nous les perçons nous –mêmes à mesure que nous les vendons.

Je t'envoie ce dessin simplement afin de s'assurer que vous ayez le bon dessin en main pour une commande future.

(Svp annuler le dessin précédent qui comportait 12 petits trous par pad. Le dessin retenu comprend 6 trous de 1.5 " par pad).

Advenant le cas d'une nouvelle commande je t'envoierais le dessin à jour de toute façon, mais je ne veux pas prendre de chances...des fois que Lucien serait pressé un jour de commander! ....je veux mettre les chances de mon bord en m'assurant que tu as le bon dessin!!!! ( Des fois y'est vite sur la gachette!)

Heureuses fêtes!

Ms Nathalie Barbeau  
General Manager

**Helitowcart** (Vanair inc.)  
877A Alphonse-Desrochers  
St-Nicolas, Lévis,  
Quebec, Canada, G7A 5K6  
main tel: +1 418 561 4512  
plant tel: +1 418 836 4525  
plant fax: +1 418 836 4575  
[nbarbeau@helitowcart.com](mailto:nbarbeau@helitowcart.com)  
[info@helitowcart.com](mailto:info@helitowcart.com)  
[www.helitowcart.com](http://www.helitowcart.com)

## Nathalie Barbeau

---

**From:** Nathalie Barbeau [nbarbeau@helitowcart.com]  
**Sent:** July 30, 2008 3:08 PM  
**To:** 'Stephane Poulin'  
**Cc:** 'Mirko Zgela'; 'simonb@ats-ast.com'  
**Subject:** Avis de changement d'ingénierie: Pads BP350 (dessins pour production)

Bonjour Stéphane,

Pour ton information, voici le dessin des pads de BP350 que nous avons dû faire changer pour ajouter des trous d'aération pour éviter la succion lors de décollage sur surface boueuse.

Voir les 12 trous ajoutés par pads. Svp conserver pour vos dossiers pour une prochaine production.

Selon nos dossiers nous n'avons pas de ce type de pads en commande actuellement.

J'en profite pour faire la demande à notre fournisseur d'ingénierie de te transmettre l'original. (message à Simon : Svp transmettre le dessin en format de production à Stéphane. Merci!)

Salutations chaleureuses,

Ms Nathalie Barbeau  
General Manager

**Helitowcart** (Vanair inc.)  
860 Marie-Victorin, St-Nicolas, Levis,  
Quebec, Canada, G7A 3S9  
tel: +1 418 561 4512  
fax: +1 418 531 0772  
[nbarbeau@helitowcart.com](mailto:nbarbeau@helitowcart.com)  
[info@helitowcart.com](mailto:info@helitowcart.com)  
[www.helitowcart.com](http://www.helitowcart.com)

• Vnr 106-5 R02  
attaché à ce message.



## Service Bulletin

**Service Bulletin no:** 080730 rev. a

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**Subject:** Vent hole additions to bearpaw pads

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**Date:** 2008 07 30

**Reason:** Reduce possible suction when taking-off from muddy surfaces

**Reference documents:** BearPaw Model BP350- Engineering order- "HTC-EO-0709-002 Rev NC".  
BearPaw-BP350-PAD-STREAMLINE- "VNR106-S R02" (314-0018-01-S).

**Recommended actions:** Pierce 12 holes on each pad

**Guidance for actions:** Hole sizes to be drilled: 5/8" diameter (9.63")  
Use drawing no VNR106-S R02.  
Page 1 indicates hole positions,  
Page 2 indicates hole size,  
Page 3 indicates hole pattern (see R02 reference and linked arrows)

---

**Issued by :** Nathalie Barbeau,  
General Manager,  
Helitowcart enterprises.

860 Marie-Victorin, St-Nicolas, Quebec, Canada, G7A 3S9  
Tel: 418-561-4512, Fax: 418-836-2291  
email: info@helitowcart.com



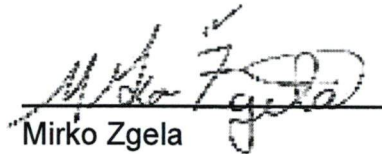
## Master Document List

Helitowcart

### Eurocopter Model AS 350/355 Series Helicopters Installation of BearPaw Model BP350

Report: HTC-MDL-BP-AS350/355-1000 (Rev D)

APPROVED BY:

  
Mirko Zgela

DATE: JULY 27, 2008

Design Approval Representative DAR #310

Revision	Revision Date	Revision of Entry	Entered by
A	Nov 22, 2006	Initial issue	N/A
B	Jan 28, 2007	Revision performed to the Installation Instructions (Doc # HTC-314-0020-00-B).	M.Z.
C	Feb 28, 2007	Addition of streamline pad configuration.	M.Z.
D	July 25, 2008	Addition of vents holes in the streamline pad.	M.Z.

 08.07.30

## 1.0 MASTER DOCUMENTS

Document #	Title	Revision Status	Approval by	Date
AAC-CPL-BP-AS350/355-1000	Compliance Plan – Eurocopter Model AS350/355 Series Helicopters – Installation of BearPaw Model BP350	NC	DAR 310	Nov 22, 2006
HTC-314-0020-00-C	BearPaw Model BP350 – Installation Instructions – AS350/355 Series Helicopters	C	DAR 310	Feb 28, 2008
AAC-STR-BP-AS350/355-1000	Structural Substantiation – Helitowcart Inc. BearPaw Model BP350	NC	DAR 310	Nov 20, 2006
AAC-FTR-C-GZNC	Simple External Modification – Applicant's Flight Test Plan/Report	NC	DAR 310	Nov 21, 2006
HTS-EO-0709-002	Bear Paw Model BP350 Vent Holes	NC	DAR 310	July 25, 2008
HTC-MEM-0709-001	Memorandum – Vent Hole BP350 BearPaw	NC	DAR 310	July 25, 2008

## 2.0 MASTER DRAWINGS

Drawings #	Title	Revision Status	Approval by	Date
112-0002-00	BearPaw BP350 - Assembly	B	DAR 310	Nov 20, 2006
112-0002-00-S	BearPaw BP350 – Assembly Streamline	B	DAR 310	July 25, 2008
VNR084	BearPaw – Iceblade	R01	DAR 310	Apr 24, 2006
VNR085	BearPaw – Iceblade Threaded Rod	R01	DAR 310	Apr 24, 2006
VNR086	BearPaw – Iceblade Assembly	R01	DAR 310	Apr 24, 2006
VNR106	BearPaw BP350 - Pad	R02	DAR 310	Sept 26, 2006
VNR106-S	BearPaw BP350 – Pad Streamline	R02	DAR 310	July 25, 2008
VNR107	BearPaw BP350 – U Shaped Clip	R01	DAR 310	Sept 29, 2006
VNR089	Bearpaw – Slotted Clip Support	R04	DAR 310	July 31, 2006
VNR099	Filler Block 1/4"	R01	DAR 310	Aug 8, 2006



### 3.0 REFERENCE DOCUMENTS

Document #	Title	Revision Status	Approval by	Date
314-0009-01-A	Ultra High Molecular Weight Polyethylene – Typical Properties	A	N/A	May 24, 2006
314-0008-01-A	Propriétés du UHMW TIVAR	A	N/A	May 24, 2006
314-0017-05-A	Heat Shrink Specifications	A	N/A	Sept 6, 2006



# BearPaw Model BP350

## Engineering Order

<b>Title:</b> Bear Paw Model BP350 Vent Holes				<b>EO#:</b> HTS-EO-0709-002 Rev NC	
<b>Prepared by:</b> Simon Bernier	<b>Design:</b> N/A	<b>Mech:</b> N/A	<b>Stress:</b> N/A	<b>Approved:</b> Mirko Zgela (DAR #310)	<b>Date:</b> July 25, 2008
<b>A/C Effectivity:</b>	AS 350 D, B, B1, B2, B3 & BA AS 355				
<b>Reference Documents:</b>					
[a]	Drawings: #112-0002-00, BearPaw BP350 – Assembly, Rev B, dated Nov 20, 2006				
[b]	#VNR106-S, BearPaw BP350 Pad Streamline, Rev R02, dated Feb 29, 2008				
[c]	# HTC-MEM-0709-001, Memorandum – Vent Holes BP350 BearPaw, Rev NC, dated July 25, 2008				
<b>Reason for change:</b>  To reduce the possibility for the BearPaw to stick to the ground while performing landing & take off on muddy terrain.					
<b>Description of change:</b>  To create a continuous path for the air, a number of holes are drilled into the Bear Paw pads.					
<b>Previous Configuration:</b>  The old configuration was as per drawing #VNR106-S, BearPaw BP350 Pad Streamline, Rev A, dated Feb 29, 2008					
<b>New Configuration:</b>  The new configuration of Bear Paw is as per drawing #VNR106-S, BearPaw BP350 Pad Streamline, Rev R02, dated July 25, 2008.					
<b>Structural substantiation:</b> The introduction of the vent holes has a negligible effect on the strength of the BearPaw and is documented in the following memorandum # HTC-MEM-0709-001, Memorandum – Vent Holes BP350 BearPaw, Rev NC, dated July 25, 2008					



## BearPaw Model BP350

### Rework Instructions:

1	Drill the hole pattern as per drawing #VNR106-S, BearPaw BP350 Pad Streamline, Rev R02, dated July 25, 2008
---	---

MEMORANDUM – VENT HOLE BP350 BEARPAW

Ref: HTC-EO-0709-002 Rev NC, dated July 25, 2008

As per document HTC-EO-0709-002 Rev NC, dated July 25 2008, a finite element model has been studied to ensure the structural substantiation of the new bearpaw. A comparison of the new model and the old is made.

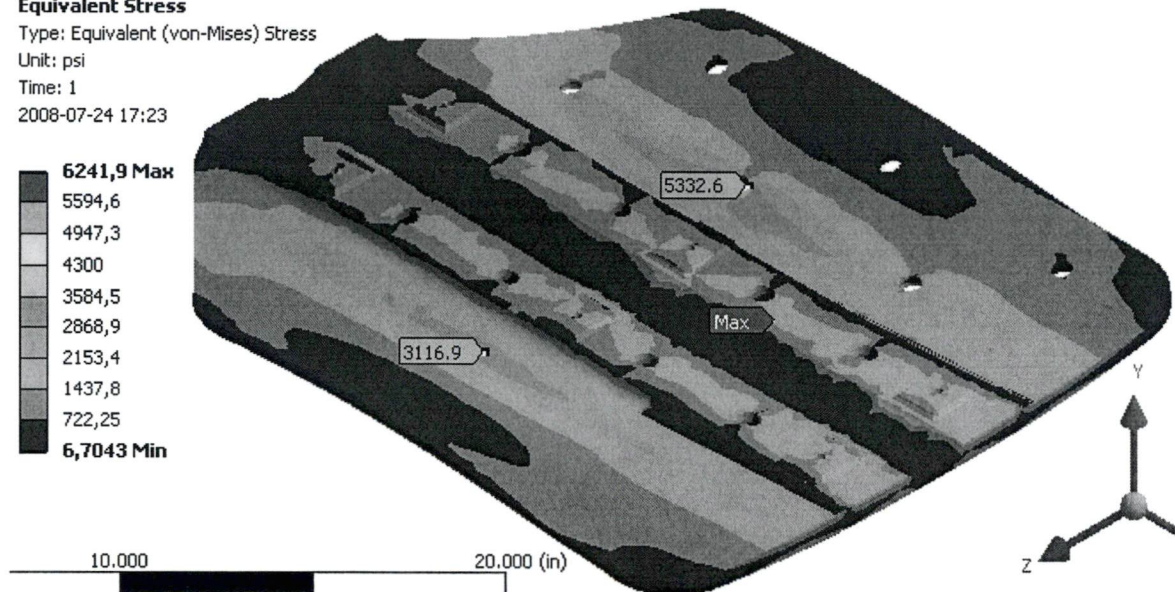
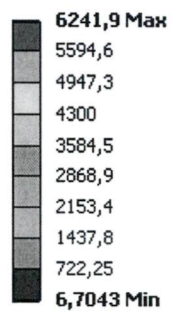
**Equivalent Stress**

Type: Equivalent (von-Mises) Stress

Unit: psi

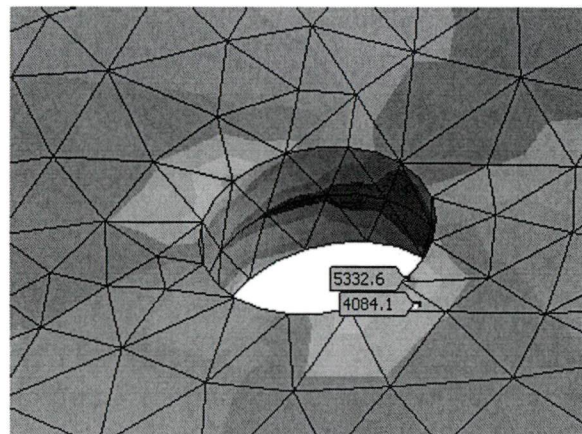
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2008-07-24 17:23



**Figure 1 - Von Mises Mapping Stress**

The model shows that the stress pass of 3117 psi to 5333 psi. But 5333 psi is not the reality, if we take a closer look at the hole stress, see Figure 2, the stress is indeed lower 4084 psi.



*D. Bata* p. 1/2

### Figure 2 - Von Mises Hole Mapping Stress

The material is very ductile, so the peak stress in the hole edge can be ignored. The material ultimate tensile strength is 6800 psi which give us a margin of safety of 1.6 is acceptable.

4

3

2

1

112-0002-00-S

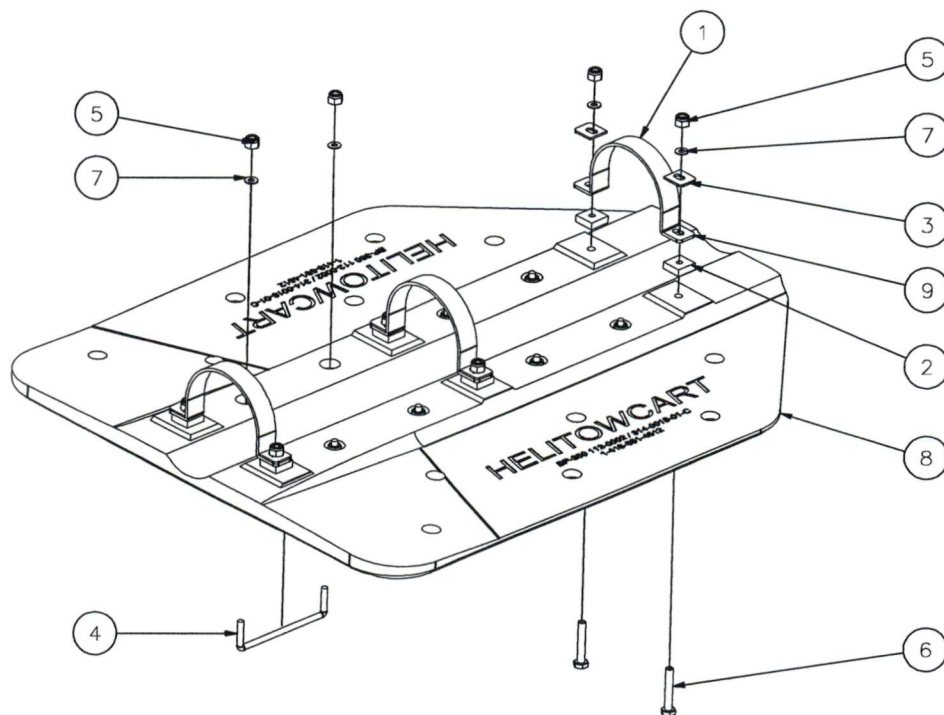
1

OF

1

## REVISIONS

1	2	3	4
1	REWORKABLE	2	NONREWORKABLE
3	NOTED	4	NA
ZONE	REV	DESCRIPTION	
A		ADDITION OF STREAMLINE PAD CONFIGURATION	
B		ADDITION OF VENT HOLES ON THE STREAMLINE PAD	



NOTE: ICEBLADE ASSEMBLY, ITEM 4,  
CAN BE OMITTED FROM INSTALLATION  
(OPTIONAL)

1	3	314 0019 15	U SHAPED CLIP	STFFI		
2	6	314 0012 01 A	FILLER BLOCK	SILL		1/4
3	6	314 0007 15 H	SLOTTED CLIP SUPPORT	STEEL		
4	4	314 0005 15 A	ICE BLADE ASSEMBLY	STEEL		1X6 1/4
5	14	262 0001 1/ A	MU20365 42B	SILL		1/4 28
6	6	261 0001 17 A	AN4 1/4	STEEL		1/4 28 UNF
7	20	263 0001 17 A	AN960 416	STEEL		1/4
8	1	314 0018 01 S	PAD STREAM LINE	POLYETHYLENE JIHW	BLACK	1
9	1	314 0021 01 A	SILKINK			
ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL	SPECIFICATION	SIZE

THE DESIGN DEPICTED IN THIS DRAWING IS THE EXCLUSIVE PROPERTY OF HELI TOW CART AND IN ACCEPTANCE OF THIS DRAWING THE RECIPIENT AGREES THAT IT WILL NOT BE USED FOR THE PURPOSE OF MANUFACTURE OR PROCUREMENT OF THE PART OR ASSEMBLY SHOWN HEREIN REPRODUCED OR OTHERWISE COPIED OR DISCLOSED TO ANY OTHER PERSON OR PARTY EXCEPT AS AUTHORIZED IN WRITING BY HELI TOW CART

UP FOR OTHER SPECIFICATIONS		DRAWN: S. REINER		25/07/2008	
UNLESS OTHERWISE SPECIFIED		DESIGNED: S. REINER		25/07/2008	
UNIT: INCHES	XX 10:20	CHECKED:			
10:20:00	XX 10:20	STRESS:			
ALL VENT HOLES SHALL BE 1/4"		WEIGHT:			
MATERIAL SPECIFICATIONS:		APPROVED:			
4" X 1" TYPICAL		APPROVED: M. ZELA		25/07/2008	
REVISIONS:		DATE:			

BEARPAW - BP350  
ASSEMBLY STREAMLINE

REV: B

112-0002-00-S

1 OF 1

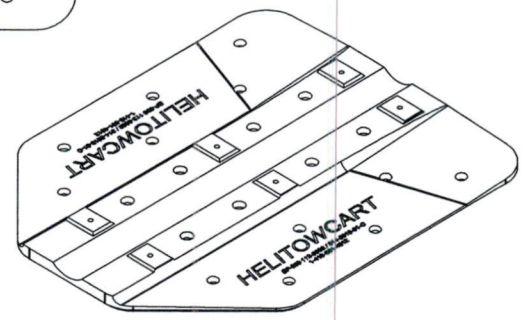
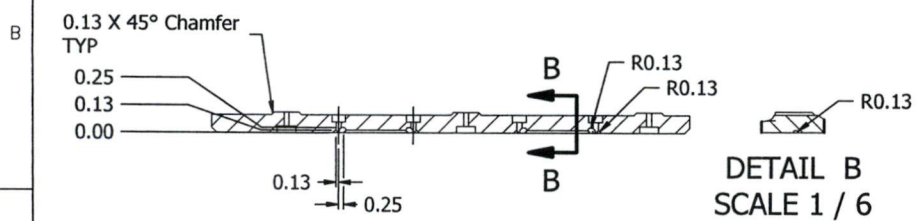
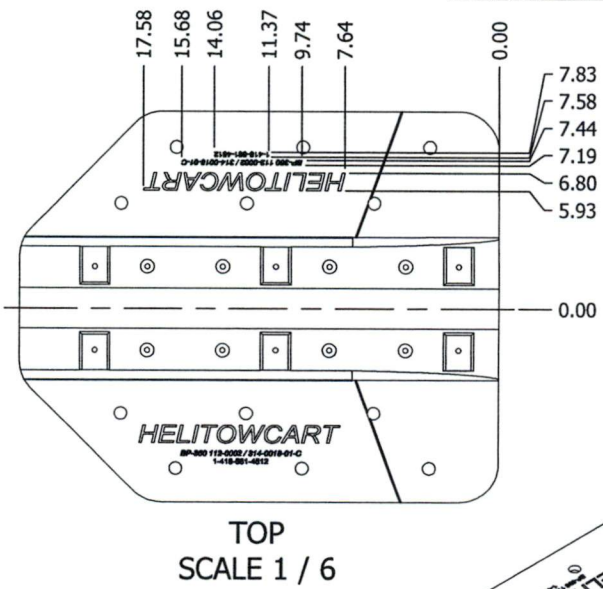
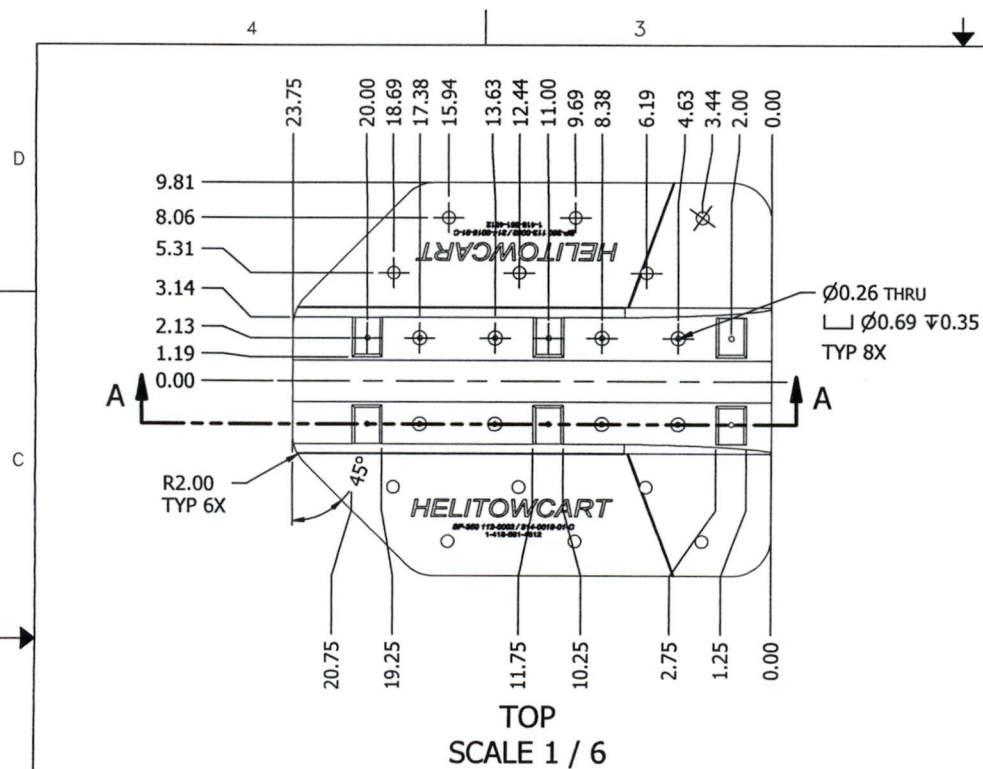
4

3

2

1

*Barber* 2008.07.30



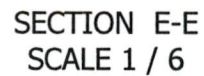
	1	106-5			1	OF	3
REVISIONS							
1	REWORKABLE	2	NONREWORKABLE	3	NOTED	4	NA
ZONE	REV	DESCRIPTION				DATE	STATUS
	R01	ADDITION OF STREAMLINE PAD CONFIGURATION					
	R02	ADDITION OF VENT HOLES ON THE STREAMLINE PAD					

1	1	314-0018-01-S	PAD STREAMLINE	POLYETHYLENE GLASS BLACK	1
ITEM	QTY	PART NUMBER	DESCRIPTION	MATERIAL	SPECIFICATION
UP. FOR OTHERS: SPECIES DIMENSIONS: IN INCHES LINE: 1/16 TOLERANCE: 1/16 ALL DIMENSIONS ARE TO CENTER UNLESS OTHERWISE SPECIFIED MATERIAL: 6061-T6 ALUMINUM FINISH: ANODIZED WEIGHT: 0.15 LBS APPROVED: 25/07/2018 APPROVED: 25/07/2018					
BEARPAW - BP350 PAD STREAMLINE DRAWING No. VNR106-S REV. R02					

THE DESIGN DEPICTED IN THIS DRAWING IS THE EXCLUSIVE PROPERTY OF HELITOW CART AND IN ACCEPTANCE OF THIS DRAWING THE RECIPIENT AGREES THAT IT WILL NOT BE USED FOR THE PURPOSE OF MANUFACTURE OR PROCUREMENT OF THE PART OR ASSEMBLY SHOWN HEREIN REPRODUCED OR OTHERWISE COPIED OR DISCLOSED TO ANY OTHER PERSON OR PARTY EXCEPT AS AUTHORIZED IN WRITING BY HELITOW CART

p.1/3

J. R. R. 08.07.30

[illegible]

THE DESIGN DEPICTED IN THIS DRAWING IS THE EXCLUSIVE PROPERTY OF HELI TOW CART AND IN ACCEPTANCE OF THIS DRAWING THE RECIPIENT AGREES THAT IT WILL NOT BE USED FOR THE PURPOSE OF MANUFACTURE OR PROCUREMENT OF THE PART OR ASSEMBLY SHOWN HEREIN REPRODUCED OR OTHERWISE COPIED OR DISCLOSED TO ANY OTHER PERSON OR PARTY EXCEPT AS AUTHORISED IN WRITING BY HELI TOW CART

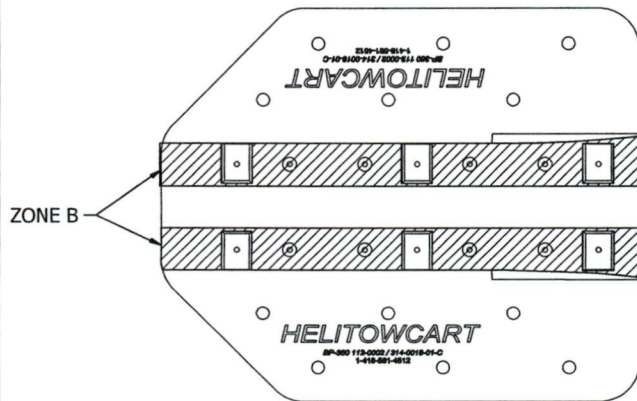
**HELI**  
**TOW CART**

BEARPAW - BP350  
PAD STREAMLINE

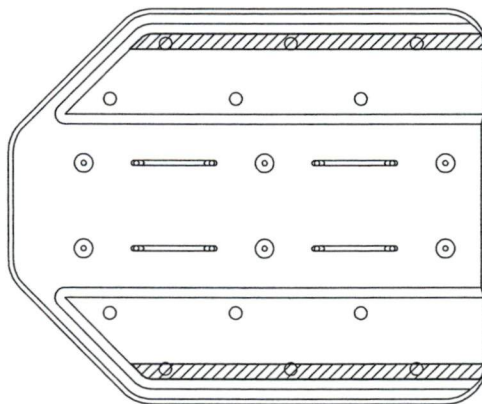
WAG. CODE:	SIZ. B	DRAWING No. VNR106-S	REV. R01
ISS. DATE: NTS	CAS. NO. # VNR106-Sub	SHEET: 2 OF 3	

NOTE:

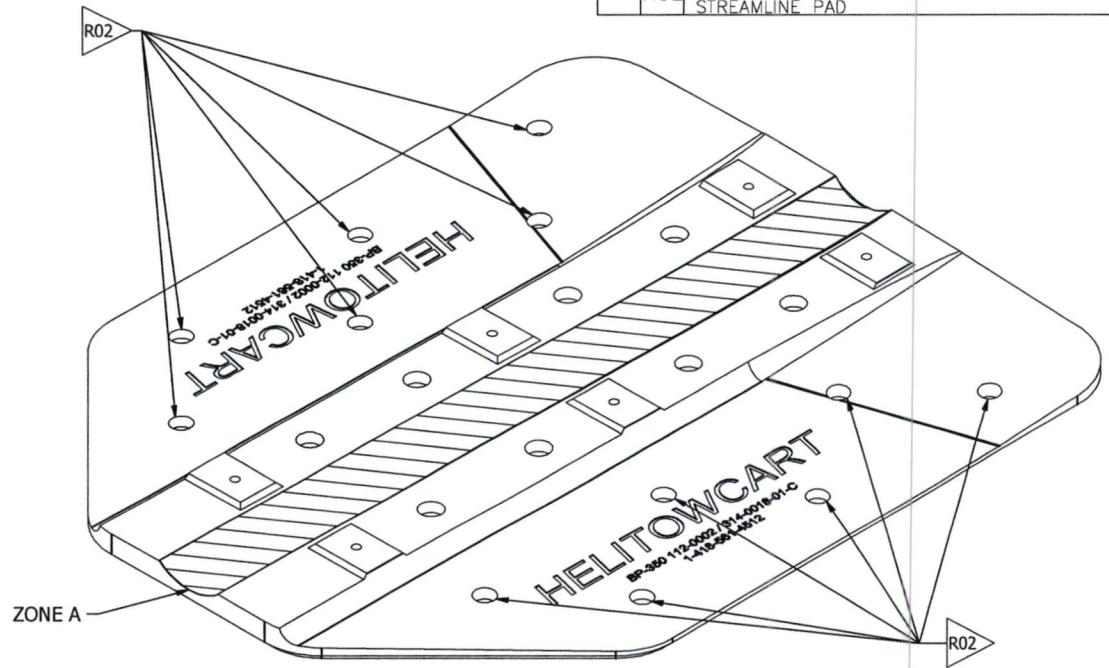
1. ZONE D = ALL NON-SHADED AREA



TOP



BOTTOM




ISO

REVISIONS				DATE	BY	APP. & SIGN.	STRESS
1	2	3	4				
1	REWORKABLE	2	NONREWORKABLE	3	NOTED	4	NA
ZONE	REV	DESCRIPTION					
	R01	ADDITION OF STREAMLINE PAD CONFIGURATION					
	R02	ADDITION OF VENT HOLES ON THE STREAMLINE PAD					

THE DESIGN DEPICTED IN THIS DRAWING IS THE EXCLUSIVE PROPERTY OF HELITOW CART AND IN ACCEPTANCE OF THIS DRAWING THE RECIPIENT AGREES THAT IT WILL NOT BE USED FOR THE PURPOSE OF MANUFACTURE OR PROCUREMENT OF THE PART OR ASSEMBLY SHOWN HEREIN REPRODUCED OR OTHERWISE COPIED OR DISCLOSED TO ANY OTHER PERSON OR PARTY EXCEPT AS AUTHORIZED IN WRITING BY HELITOW CART

UP. P.S. (STANDARD SPECIFIC)				L-64WV: S. BERNER				25/07/2005			
DRAWING: 112-0002/01A-0018-01-C				DESIGNED: S. BERNER				25/07/2005			
UNIT: 112-0002/01A-0018-01-C				CHECKED:							
ALL VAC. INCL. SHIP ZOL				STRESS:							
W/TEPPL: 112-0002/01A-0018-01-C				WORKIT:							
SOL: 112-0002/01A-0018-01-C				APP. & JVC:							
ENGIN: 112-0002/01A-0018-01-C				APP. & JVC:							
CACH: 112-0002/01A-0018-01-C				APP. & JVC:							
NEXT ASSY:				APP. & JVC:							
CTY PFR:				APP. & JVC:							
ACFI:				APP. & JVC:							
MOD:				APP. & JVC:							
CACH: 112-0002/01A-0018-01-C				APP. & JVC:							
NEXT ASSY:				APP. & JVC:							
CTY PFR:				APP. & JVC:							
ACFI:				APP. & JVC:							
MOD:				APP. & JVC:							

		VENDOR: C. BERNER 25/07/2005 DESIGNED: S. BERNER 25/07/2005 CHECKED: [blank] WORKIT: [blank] APP. & JVC: [blank]	
BEARPAW - BP350 PAD STREAMLINE			
DES. CODE:	SIZE	JHAJINJA No.	REV
	B	VNR100-S	R02
SCALE: 1/8"	CAD: [blank]	DATE: 07/25/2005	SHEET: 3 OF 3

FAX TRANSMISSION

2<sup>E</sup> FAX

Date: 2008.07.24

Pages: ~~2~~ 1

To: SIMON BÉDARD

Fax: 819.377.7928

From: NATHALIE BARBEAD

Object:

Voici NOTRE suggestion,  
MERCI!

Nathalie

Pour Mirko:

JE CONFIRME; MODELE STREAMLINE...

- 10 PAIRES VENDUES À HELI CAN
- AUCUNE AUTRE PAIRE EN CIRCULATION

- 2 PAIRES EN STOCK ASSEMBLÉES
- 36 PAIRS EN STOCK NON ASSEMBLÉS

MERCI MIRKO!

$\frac{2}{5}$

$6\frac{1}{4}$



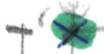
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$6\frac{1}{4}$



$1\frac{3}{4}$

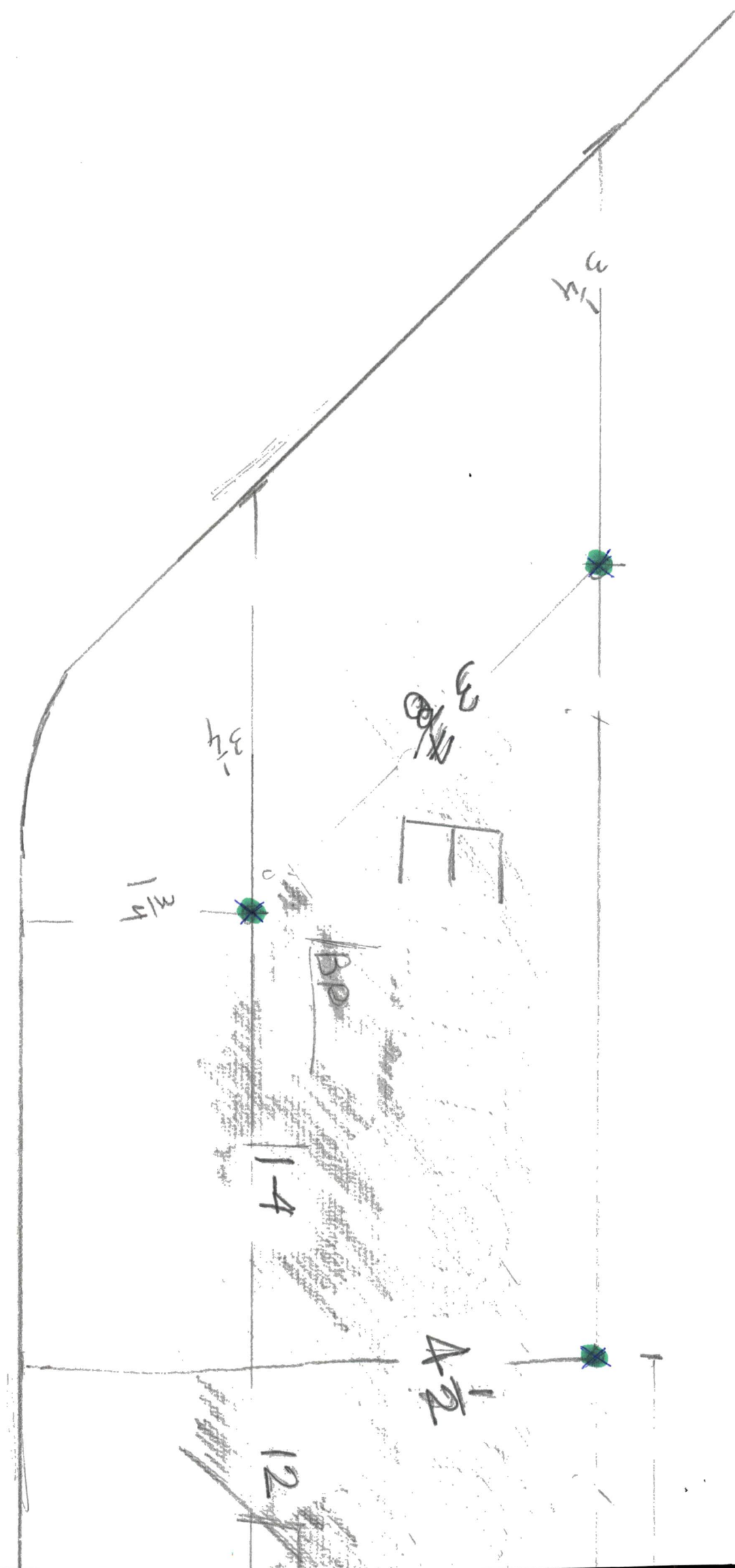
$\frac{5}{3}$



$1\frac{3}{4}$









Helitowcart - AFTER SALES SERVICE	F80-01	Page 1 of 1
Reviewed & approved by:		2006 09 09

# A- REQUEST

SAFETY: No ☒ Yes

ASS 2008-07-24-01  
(yyyy-mm-dd-seq)

Object

CUSTOMER (HELI CAN) INFORMS US THAT STREAMLINE PADS CAN CREATE SUCCION. THEY REQUEST CHANGE BULLETIN TO BE AUTHORIZED TO PIERCE HOLES FOR VENTS

By NB

Date

11

Customer Contact

CLAUDE BOUCÉ, CAN. HELI 450. 452. 3025

Commitment

- WE SUBMIT ISSUE TO OUR ENGINEERING SPECIALIST IMMEDIATELY. (M. ZGELA)
- WE WILL GET BACK TO HIM.

# B- ACTIONS

Analysis

NCR: 2008. 07. 24 NB01

CAR/PAR: 007

- EVALUATE QTY & POSITION & SIZE OF SUGGESTED VENT HOLES
- IDENTIFY CURRENT STREAMLINE PAD CUSTOMERS

By NB

Date

11

Actions	Resp	Due date	Verif.
1) ISOLATE INVENTORY WHILE WAITING FOR SOLUTION	NB	08 07 24	✓
2) SUBMIT SUGG SOLN & REQUEST TO M. ZGELA	NB	08 07 24	✓
3) OBTAIN SOLUTION FROM M. ZGELA	NB	08 07 30	✓
4) ISSUE ECO 13 FOR BP350 PADS	NB	08 07 30	✓
5) ISSUE BULLETIN	NB	08 07 30	✓
6) INFORM CUSTOMER	NB	08 07 30	✓
7) INFORM SUPPLIER	NB	08 07 30	✓

C- CLOSURE

By

Date